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# Post- Scarcity Anarchism

## Murray Bookchin

With a new introduction

Philosophy / Politics / Sociology / Ecology

# Murray Bookchin / Post-Scarcity Anarchism

## Second Edition / with a new introduction

*"Breaks new ground in its discussion of freedom in a society of technological abundance... Bookchin makes a trenchant analysis of modern society, and offers a pointed, provocative discussion of the ecological crisis."*

Library Journal

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Murray Bookchin has been a major spokesperson for more than twenty years for the ecology, appropriate technology and anti-nuclear movements. He is the author of many books, including *The Spanish Anarchists*, *Our Synthetic Environment*, *The Limits of the City*, *Toward an Ecological Society*, *Urbanization Without Cities*, and *The Ecology of Freedom*.

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# Post- Scarcity Anarchism

Second Edition

Murray Bookchin  
With a new introduction

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Montreal-Buffalo

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memory of  
Josef Weber  
and  
Allan Hoffman

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# Introduction to the First Edition

We normally live completely immersed in the present—to such a degree, in fact, that we often fail to see how much our own social period differs from the past—indeed from a mere generation ago. This captivity to the contemporary can be very insidious. It may shackle us unknowingly to the most reactionary aspects of tradition, be they obsolete values and ideologies, hierarchical forms of organization, or one-sided modes of political behavior. Unless our roots in contemporary life are broadened by a rich perspective, they may easily distort our understanding of the world as it really is, as well as its rich potentialities for the future.

For the world is changing profoundly, more profoundly than many of us seem to recognize. Until very recently, human society developed around the brute issues posed by unavoidable material scarcity and their subjective counterpart in denial, renunciation and guilt. The great historic splits that destroyed early organic societies, dividing man from nature and man from man, had their origins in the problems of survival, in problems that involved the mere maintenance of human existence.\* Material scarcity provided the historic rationale for the development of the patriarchal family, private property, class domination and the state; it nourished the great divisions in hierarchical society that pitted town against country, mind against sensuousness, work against play, individual against society, and, finally, the individual against himself.

\* By "organic societies" I mean forms of organization in which the community is united by kinship ties and by common interests in dealing with the means of life. Organic societies are not yet divided into the classes and bureaucracies based on exploitation that we find in hierarchical society.

Whether this long and tortuous development could have followed a different, more benign, course is now irrelevant. The development is largely behind us. Perhaps like the mythic apple, which, once bitten, had to be consumed completely, hierarchical society had to complete its own bloody journey before its demonic institutions could be exorcised. Be that as it may, our position in that historic drama differs fundamentally from that of anyone in the past. We of the twentieth century are literally the heirs of human history, the legatees of man's age-old effort to free himself from drudgery and material insecurity. For the first time in the long succession of centuries, this century—and this one alone—has elevated mankind to an entirely new level of technological achievement and to an entirely new vision of the human experience.

We of this century have finally opened the prospect of material abundance for all to enjoy—a sufficiency in the means of life without the need for grinding, day-to-day toil. We have discovered resources, both for man and industry, that were totally unknown a generation ago. We have devised machines that automatically make machines. We have perfected devices that can execute onerous tasks more effectively than the strongest human muscles, that can surpass the industrial skills of the deftest human hands, that can calculate with greater rapidity and precision than the most gifted human minds. Supported by this qualitatively new technology, we can begin to provide food, shelter, garments, and a broad spectrum of luxuries without devouring the precious time of humanity and without dissipating its invaluable reservoir of creative energy in mindless labor. In short, for the first time in history we stand on the threshold of a post-scarcity society.

The word "threshold" should be emphasized here for in no way has the existing society realized the post-scarcity potential of its technology. Neither the material "privileges" that modern capitalism seems to afford the middle

classes nor its lavish wasting of resources reflects the rational, humanistic, indeed unalienated, content of a post-scarcity society. To view the word "post-scarcity" simply as meaning a large quantity of socially available goods would be as absurd as to regard a living organism simply as a large quantity of chemicals.\* For one thing, scarcity is more than a condition of scarce resources: the word, if it is to mean anything in human terms, must encompass the social relations and cultural apparatus that foster insecurity in the psyche. In organic societies this insecurity may be a function of the oppressive limits established by a precarious natural world; in a hierarchical society it is a function of the repressive limits established by an exploitative class structure. By the same token, the word "post-scarcity" means fundamentally more than a mere abundance of the means of life: it decidedly includes the *kind* of life these means support. The human relationships and psyche of the individual in a post-scarcity society must fully reflect the freedom, security and self-expression that this abundance makes possible. Post-scarcity society, in short, is the fulfillment of the social and cultural potentialities latent in a technology of abundance.

Capitalism, far from affording "privileges" to the middle classes, tends to degrade them more abjectly than any other stratum in society. The system deploys its capacity for abundance to bring the petty bourgeois into complicity with his own oppression—first by turning him into a commodity, into an object for sale in the marketplace; next by assimilating his very wants to the commodity nexus. Tyrannized as he is by every vicissitude of bourgeois soci-

\* Hence the absurdity of Tom Hayden's use of the expression "post-scarcity" in his recent book, *The Trial*. Hayden's fear that the youth culture might slip into "post-scarcity hedonism" and become socially passive suggests that he has yet to understand fully the meaning of "post-scarcity" and the nature of the youth culture.

ety, the whole personality of the petty bourgeois vibrates with insecurity. His soporifics—commodities and more commodities—are his very poison. In this sense there is nothing more oppressive than "privilege" today, for the deepest recesses of the "privileged" man's psyche are fair game for exploitation and domination.

But by a supreme twist of dialectical irony, the poison is also its own antidote. Capitalism's capacity for abundance—the soporific it employs for domination—stirs up strange images in the dream world of its victims. Running through the nightmare of domination is the vision of freedom, the repressed intuition that what-is could be otherwise if abundance were used for human ends. Just as abundance invades the unconscious to manipulate it, so the unconscious invades abundance to liberate it. The foremost contradiction of capitalism today is the tension between what-is and what-could-be—between the actuality of domination and the potentiality of freedom. The seeds for the destruction of bourgeois society lie in the very means it employs for its self-preservation: a technology of abundance that is capable of providing for the first time in history the material basis for liberation. The system, in a sense, is in complicity against itself. As Hegel put it in another context: "The struggle is too late; and every means taken makes the disease worse. . ."<sup>1</sup>

If the struggle to preserve bourgeois society tends to be self-vitiating, so too is the struggle to destroy it. Today the greatest strength of capitalism lies in its ability to subvert revolutionary goals by the ideology of domination. What accounts for this strength is the fact that "bourgeois ideology" is not merely bourgeois. Capitalism is the heir of history, the legatee of all the repressive features of earlier hierarchical societies, and bourgeois ideology has been pieced together from the oldest elements of social domination and conditioning—elements so very old, so intractable, and so seemingly unquestionable, that we often mistake

them for "human nature." There is no more telling commentary on the power of this cultural legacy than the extent to which the socialist project itself is permeated by hierarchy, sexism and renunciation. From these elements come all the social enzymes that catalyze the everyday relationships of the bourgeois world—and of the so-called "radical movement."

Hierarchy, sexism and renunciation do not disappear with "democratic centralism," a "revolutionary leadership," a "workers' state," and a "planned economy." On the contrary, hierarchy, sexism, and renunciation function all the more effectively if centralism appears to be "democratic," if leaders appear to be "revolutionaries," if the state appears to belong to the "workers," and if commodity production appears to be "planned." Insofar as the socialist project fails to note the very existence of these elements, much less their vicious role, the "revolution" itself becomes a facade for counterrevolution. Marx's vision notwithstanding, what tends to "wither away" after this kind of "revolution" is not the state but the very consciousness of domination.

Actually, much that passes for a "planned economy" in socialist theory has already been achieved by capitalism; hence the capacity of state capitalism to assimilate large areas of Marxist doctrine as official ideology. Moreover, in the advanced capitalist countries, the very progress of technology has removed one of the most important reasons for the existence of the "socialist state"—the need (in the words of Marx and Engels) "to increase the total of productive forces as rapidly as possible."<sup>2</sup> To loiter any longer around the issues of a "planned economy" and a "socialist state"—issues created by an earlier stage of capitalism and by a lower stage of technological development—would be sectarian cretinism. The revolutionary project must become commensurate with the enormous social possibilities of our time, for just as the material

preconditions of freedom have expanded beyond the most generous dreams of the past, so too has the vision of freedom. As we stand on the threshold of a post-scarcity society, the social dialectic begins to mature, both in terms of what must be abolished and what must be created. We must bring to an end not only the social relations of bourgeois society, but also the legacy of domination produced by long millennia of hierarchical society. What we must create to replace bourgeois society is not only the classless society envisioned by socialism, but the nonrepressive utopia envisioned by anarchism.

Until now we have been occupied primarily with the technological capabilities of bourgeois society, its potential for supporting a post-scarcity society, and the tension this creates between what-is and what-could-be. Let there be no mistaken notion that this tension floats in some vague fashion between theoretical abstractions. The tension is real, and it finds daily expression in the lives of millions. Often intuitively, people begin to find intolerable the social, economic and cultural conditions that were passively accepted only a decade or so ago. The growth of the black liberation movement over the past ten years (a movement that has heightened every sensibility of black people to their oppression) is explosive evidence of this development. Black liberation is being joined by women's liberation, youth liberation, children's liberation and gay liberation. Every ethnic group and virtually every profession is in a ferment that would have seemed inconceivable a mere generation ago. The "privileges" of yesterday are becoming the "rights" of today in almost dizzying succession among students, young people generally, women, ethnic minorities, and, in time, among the very strata on which the system has traditionally relied for support. The very concept of "rights" is becoming suspect as the expression of a patronizing elite which bestows and denies "rights" and

"privileges" to inferiors. A struggle against elitism and hierarchy as such is replacing the struggle for "rights" as the main goal. It is not *justice* any longer that is being demanded, but rather *freedom*. Moral sensibilities to abuses—even the most minor abuses by earlier standards—are reaching an acuity that would have seemed inconceivable only a few years ago.

The liberal euphemism for the tension between actuality and potentiality is "rising expectations." What this sociological phrase fails to reveal is that these "expectations" will continue to "rise" until Utopia itself is achieved. And for good reason. What goads the "expectations" into "rising"—indeed, into escalating with each "right" that is gained—is the utter irrationality of the capitalist system itself. When cybernated and automatic machinery can reduce toil to the near vanishing point, nothing is more meaningless to young people than a lifetime of toil. When modern industry can provide abundance for all, nothing is more vicious to poor people than a lifetime of poverty. When all the resources exist to promote social equality, nothing is more criminal to ethnic minorities, women and homosexuals than subjugation. These contrasts could be extended indefinitely, covering all the issues that have produced the social agony of our era.

In attempting to uphold scarcity, toil, poverty and subjugation against the growing potential for post-scarcity, leisure, abundance and freedom, capitalism increasingly emerges as the most irrational, indeed the most artificial, society in history. The society now takes on the appearance of a totally *alien* (as well as alienating) force. It emerges as the "other," so to speak, of humanity's deepest desires and impulses. On an ever-greater scale, potentiality begins to determine and shape one's everyday view of actuality, until a point is reached where everything about the society—including its most "attractive" amenities—seems totally insane, the result of a massive social lunacy.

Not surprisingly, subcultures begin to emerge which emphasize a natural diet as against the society's synthetic diet, an extended family as against the monogamous family, sexual freedom as against sexual repression, tribalism as against atomization, community as against urbanism, mutual aid as against competition, communism as against property, and, finally, anarchism as against hierarchy and the state. In the very act of refusing to live by bourgeois strictures, the first seeds of the Utopian lifestyle are planted. Negation passes into affirmation; the rejection of the present becomes the assertion of the future within the rotting guts of capitalism itself. "Dropping out" becomes a mode of dropping in—into the tentative, experimental, and as yet highly ambiguous, social relations of Utopia. Taken as an end in itself, this lifestyle is not utopia; indeed, it may be woefully incomplete. Taken as a means, however, this lifestyle and the processes leading to it are indispensable in remaking the revolutionary, in awakening his sensibilities to how much must be changed if the revolution is to be complete. The lifestyle is indispensable in preserving the integrity of the revolutionary, in providing him with the psychic resources to resist the subversion of the revolutionary project by bourgeois values.

The tension between actuality and potentiality, between present and future, acquires apocalyptic proportions in the ecological crisis of our time. Although a large part of this book will deal with environmental problems, several broad conclusions should be emphasized. Any attempt to solve the environmental crisis within a bourgeois framework must be dismissed as chimerical. Capitalism is inherently anti-ecological. Competition and accumulation constitute its very law of life, a law which Marx pungently summarized in the phrase, "production for the sake of production." Anything, however hallowed or rare, "has its price" and is fair game for the marketplace. In a society of

this kind, nature is necessarily treated as a mere resource to be plundered and exploited. The destruction of the natural world, far from being the result of mere hubristic blunders, follows inexorably from the very logic of capitalist production.

The schizoid attitude of the public toward technology—an attitude that mingles fear with hope—should not be dismissed lightmindedly. This attitude expresses a basic intuitive truth: the same technology that could liberate man in a society organized around the satisfaction of human needs must inevitably destroy him in a society organized around "production for the sake of production." To be sure, the Manichean dualism imputed to technology is not a feature of technology as such. The capacities of modern technology to create or destroy are simply the two faces of a common social dialectic—the negative and positive features of hierarchical society. If there is any truth to Marx's claim that hierarchical society was "historically necessary" in order to "dominate" nature, we should never forget that the concept of "dominating" nature emerged from the domination of man by man. Both men and nature have always been the common victims of hierarchical society. That both are now faced with ecological extinction is evidence that the instruments of production have finally become too powerful to be administered as instruments of domination.

Today, as we stand at the end of hierarchical society's development, its negative and positive aspects can no longer be reconciled. Not only do they stand opposed to each other irreconcilably, they stand opposed to each other as mutually exclusive wholes. All the institutions and values of hierarchical society have exhausted their "historically necessary" functions. No longer is there any social rationale for property and classes, for monogamy and patriarchy, for hierarchy and authority, for bureaucracy and the state. These institutions and values, together with

the city, the school and the instrumentalities of privilege, have reached their historical limits. In contrast to Marx, we would have little quarrel with Bakunin's view that the institutions and values of hierarchical society were *always* a "historically necessary evil." If Bakunin's verdict seems to enjoy a moral superiority over Marx's today, this is because the institutions have finally lost their moral authority.\*

By the same token, the coming revolution and the utopia it creates must be conceived of as wholes. They can leave no area of life untouched that has been contaminated by domination.<sup>t</sup> From the revolution there must emerge a society that transcends all the splits of the past; indeed, one must emerge that offers every individual the feast of a many-sided, rounded and total experience.

In describing this utopia as "anarchism," I might have also used an equivalent expression—"anarcho-communism." Both terms denote a stateless, classless, decentralized society in which the splits created by propertied society are transcended by new, unalienated human rela-

\* Hence the reactionary aspect of the socialist project, which still retains the concepts of hierarchy, authority and the state as part of humanity's postrevolutionary future. By implication this project also retains the concepts of property ("nationalized") and classes ("proletarian dictatorship"). The various "orthodox" Marxists (Maoists, Trotskyists, Stalinists and the hybridized sects that combine all three tendencies) mediate the negative and positive features of the overall social development ideologically—precisely at a time when they have never been more irreconcilable objectively.

<sup>t</sup> Hence the revolutionary core of the women's liberation movement, which has brought the very syntax and musculature of domination into public view. In so doing, the movement has brought everyday life itself, not just abstractions like "Society," "Class," and "Proletariat," into question. Here I must apologize for using terms like "man," "mankind," and "humanity" and the masculine gender in this book. In the absence of substitutes for "people" and "individuals" my wording would have become awkward. Our language must also be liberated.

tionships. An anarchist or anarcho-communist society presupposes the abolition of private property, the distribution of goods according to individual needs, the complete dissolution of commodity relationships, the rotation of work, and a decisive reduction in the time devoted to labor. As this description stands, however, we have little more than the anatomy of a free society. The description lacks an account of the physiology of freedom—of freedom as the process of communizing. The description, in effect, lacks those subjective dimensions that link the remaking of society to the remaking of the psyche.

Anarchists have probably given more attention to the subjective problems of revolution than any other revolutionary movement. Viewed from a broad historical perspective, anarchism is a libidinal upsurge of the people, a stirring of the social unconscious that reaches back, under many different names, to the earliest struggles of humanity against domination and authority. Its commitment to doctrinal shibboleths is minimal. In its active concern with the issues of everyday life, anarchism has always been preoccupied with lifestyle, sexuality, community, women's liberation and human relationships. Its central focus has always been the only meaningful goal social revolution can have—the remaking of the world so that human beings will be ends in themselves and human life a revered, indeed a marvelous, experience. For most radical ideologies, this goal has been peripheral. More often than not, these ideologies, by emphasizing abstractions over people, have reduced human beings to a means—ironically in the name of "the People" and "Freedom."

The difference between socialists and anarchists reveals itself not only in conflicting theories but also in conflicting types of organization and praxis. I have already noted that socialists organize into hierarchical bodies. By contrast, anarchists base their organizational structures on the "affinity group"—a collective of intimate friends who are no

less concerned with their human relationships than with their social goals. The very mode of anarchist organization transcends the traditional split between the psyche and the social world. If the need arises, there is nothing to prevent the affinity groups from coordinating into fairly large movements (the Spanish anarchists, for example, built a nationwide federation of thousands out of this nuclear form). The movements, however, have the advantage that control over the larger organization lies always with the affinity groups rather than with the coordinating bodies. All action, in turn, is based on voluntarism and self-discipline, not on coercion and command. Praxis, in such an organization, is liberatory in the personal as well as in the social arena. The very nature of the group encourages the revolutionary to revolutionize himself.

This liberatory approach to praxis is carried still further in the anarchist conception of "direct action." Generally, direct action is regarded as a tactic, as a method of abolishing the state without recourse to state institutions and techniques. Although the foregoing interpretation is correct as far as it goes, it hardly goes far enough. Direct action is a basic revolutionary strategy, a mode of praxis intended to promote the individuation of the "masses." Its function is to assert the identity of the particular within the framework of the general. More important than its political implications are its psychological effects, for direct action makes people aware of themselves as individuals who can affect their own destiny.\*

\* I should add here that the slogan "**Power** to the **people**" can only be put into practice when the power exercised by social elites **is** dissolved into the **people**. Each individual can then take control **of** his daily life. If "Power to the **people**" means nothing more than power to the "leaders" **of** the people, then the **people** remain an undifferentiated, manipulatable **mass**, **as** powerless after the revolution **as** they were before. In the last analysis, the **people** can never have power until they disappear **as a** "people."

Finally, anarchist praxis also emphasizes spontaneity—a conception of praxis as an inner process, not an external, manipulated process. Its critics notwithstanding, this concept does not fetishize mere undifferentiated "impulse." Like life itself, spontaneity can exist on many different levels; it can be more or less permeated by knowledge, insight and experience. In a free society, the spontaneity of a three-year-old would hardly be of the same order as that of a thirty-year-old. Although both would be free to develop without restraint, the behavior of the thirty-year-old would be based on a more defined and more informed self. By the same token, spontaneity may be more informed in one affinity group than in another, more seasoned by knowledge and experience.

But spontaneity is no more an organizational "technique" than direct action is merely an organizational tactic. Belief in spontaneous action is part of a still larger belief—the belief in spontaneous development. Every development must be free to find its own equilibrium. Spontaneity, far from inviting chaos, involves releasing the inner forces of a development to find their authentic order and stability. As we shall see in the articles that follow, spontaneity in social life converges with spontaneity in nature to provide the basis for an ecological society. The ecological principles that shaped organic societies re-emerge in the form of social principles to shape Utopia. But these principles are now informed by the material and cultural gains of history. Natural ecology becomes social ecology. In Utopia man no more returns to his ancestral immediacy with nature than anarcho-communism returns to primitive communism. Whether now or in the future, human relationships with nature are always mediated by science, technology and knowledge. But whether or not science, technology and knowledge will improve nature to its own benefit will depend upon man's ability to improve his social condition. Either revolution will create an eco-

logical society, with new ecotechnologies and ecocommunities, or humanity and the natural world as we know it today will perish.

Every revolutionary epoch is a period of convergence when apparently separate processes collect to form a socially explosive crisis. If our own revolutionary epoch often seems more complex than earlier ones, this is because the processes that have been collecting together are more universal than they have ever been in the past. Our point of departure has no comforting historical precedents on which to rely. Earlier revolutionary epochs at least dealt with familiar institutional categories—the family, religion, property, toil and the state were taken for granted, even if their forms were challenged.\* Hierarchical society had not exhausted these categories. Its development into more commanding and comprehensive social relations was still unfulfilled.

In our time, however, this development has reached the point of saturation. There is no future for hierarchical society to claim, and for us there are the alternatives only of utopia or social extinction. So heavily are we laden with the debris of the past and so pregnant are we with the possibilities of the future that our estrangement with the world reaches the point of anguish. Past and future superimpose themselves on each other like latent images emerging in a double exposure. The familiar is there, but, like the psychedelic posters whose letters take the form of writhing human limbs, it blends elusively with the strange. A slight shift in position and the given reality is inverted completely. Learning to live appears to us the only mode of survival, play the only mode of work, the personal the

\* This situation did not change with the Russian Revolution or the "socialist" revolutions that have occurred since then. The institutional categories have not disappeared; at most the names have changed.

only mode of the social, the abolition of sex roles the only mode of sexuality, tribalism the only mode of the family, sensuality the only mode of rationality. This interweaving of the old and new, with its incredible inversions, is not the usual "doublespeak" of the established order; it is an objective fact, which reflects the vast social changes that are in birth.

Every revolutionary epoch, moreover, not only brings together apparently separate processes but also converges them on a specific locus in time and space where the social crisis is most acute. In the seventeenth century this center was England; in the eighteenth and nineteenth, France; in the early twentieth, Russia. The center of the social crisis in the late twentieth century is the United States—an industrial colossus that produces more than half of the world's goods with little more than five percent of the world's population. Here is the Rome of world capitalism, the keystone of its imperial arch, the workshop and marketplace of its commodities, the den of its financial wizardry, the temple of its culture, and the armory of its weapons. Here, too, is the center of the world counter-revolution—and the center of the social revolution that can overthrow hierarchical society as a world-historical system.

To ignore the strategic position of the United States, both historically and internationally, would reveal an incredible insensitivity to reality. To fail to draw all the implications of this strategic position and act upon them accordingly would be negligence of criminal proportions. The stakes are too great to allow for obscurantism. America, it must be emphasized, occupies the most advanced social terrain in the world. America, more than any other country, is pregnant with the most important social crisis in history. Every issue that bears on the abolition of hierarchical society and on the construction of utopia is more apparent here than elsewhere. Here lie the resources to annul and transcend what Marx called the "prehistory" of

humanity. Here, too, are the contradictions that produce the most advanced form of revolutionary struggle. The decay of the American institutional structure results not from any mystical "failure of nerve" or from imperialist adventures in the Third World, but primarily from the overripeness of America's technological potential. Like hanging fruit whose seeds have matured fully, the structure may fall at the lightest blow. The blow may come from the Third World, from major economic dislocations, even from premature political repression, but fall the structure must, owing to its ripeness and decay.

In a crisis of this magnitude, the core problems of hierarchical society can be reached from *every* facet of life, be they personal or social, political or ecological, moral or material. Every critical act and movement erodes the domestic and imperial edifice. To repel any expression of discontent with sectarian harangues, borrowed from entirely different arenas and eras of social conflict, is simply blindness. Carried to its logical conclusions, the struggle for black liberation *is* the struggle against imperialism; the struggle for a balanced environment *is* the struggle against commodity production; the struggle for women's liberation *is* the struggle for human freedom.

True, a great deal of the pursuit of this discontent can be diverted into established institutional channels for a time. But only for a time. The social crisis is too deep and world-historical for the established institutions to contain it. If the system failed to assimilate the black movement, the "love generation," and the student movement of the sixties, it was not for want of institutional flexibility and resources. Despite the Cassandra-like forebodings of the American "left," these movements essentially rejected what the established institutions had to offer. More precisely, their demands increased as each one was met. At the same time, the physical base of the movements expanded. Radiating out from a few isolated urban centers,

black, hippie, and student radicalism percolated through the country, penetrating high schools as well as universities, suburbs as well as ghettos, rural communities as well as cities.

To challenge the value of these movements because their recruits are often white middle-class youth begs the question. There is perhaps no better testimony to the instability of bourgeois society than the fact that many militant radicals tend to come from the relatively affluent strata. It is conveniently forgotten that the fifties had *Cassandras* of a different type—the "Orwell generation," which warned that bureaucratic society was engineering American youth into polished conformity with the establishment. According to the predictions of that time, bureaucratic society was to acquire its main support from succeeding generations of young people. The ebbing generation of the thirties, it was argued, would be the last repository of radical, humanistic values. As it turned out, the very reverse occurred. The generation of the thirties has become one of the most willfully reactionary sectors of society, while the young people of the sixties have become the most radical.

In this seeming paradox, the contradiction between scarcity and the potential for post-scarcity appears in the form of outright confrontation. A generation whose entire psyche has been shaped by scarcity—by the depression and insecurities of the thirties—confronts another whose psyche has been influenced by the potential for a post-scarcity society. White middle-class youth has the real privilege of rejecting false "privilege." In contrast to their depression-haunted parents, young people are disenchanted by a flatulent consumerism that pacifies but never satisfies. The generation gap is real. It reflects an objective gap that increasingly separates America today from its own social history, from a past that is becoming archaic. Although this past has yet to be interred, a generation is

emerging that may well prove to be its gravediggers.

To criticize this generation for its "bourgeois roots" exhibits the wisdom of a dunce who doesn't know that his most serious remarks are evoking laughter. All who live in bourgeois society have "bourgeois roots," be they workers or students, young people or old, black people or white. How much of a bourgeois one becomes depends exclusively upon what one accepts from bourgeois society. If young people reject consumerism, the work ethic, hierarchy and authority, they are more "proletarian" than the proletariat—a bit of semantic nonsense that should encourage us to inter the threadbare elements of socialist ideology together with the archaic past from which they derive.

If this nonsense still commands any attention today, it is due to the anemic character of the revolutionary project in the United States. American revolutionaries have yet to find a voice that relates to American issues. First World problems are not Third World problems; the two, moreover, are not bridged by retreating to ideologies that deal with nineteenth-century problems. Insofar as American revolutionaries mechanically borrow their formulas and slogans from Asia and Latin America, they do the Third World a grave disservice. What the Third World needs is a revolution in America, not isolated sects that are incapable of affecting the course of events. To promote that revolution would be the highest act of internationalism and solidarity with oppressed people abroad; it would require an outlook and a movement that speak to the problems unique to the United States. We need a cohesive, revolutionary approach to American social problems. Anyone who is a revolutionary in the United States is *necessarily* an internationalist by virtue of America's world position, so I need make no apologies for the attention I give to this country.

The articles that make up this book must be seen as a

unified whole. What essentially unifies them is the view that man's most visionary dreams of liberation have now become compelling necessities. All the articles are written from the perspective that hierarchical society, after many bloody millenia, has finally reached the culmination of its development. The problems of scarcity, from which emerged propertied forms, classes, the state and all the cultural paraphernalia of domination, can now be resolved by a post-scarcity society. In reaching the point where scarcity can be eliminated, we find that a post-scarcity society is not merely desirable or possible, but absolutely necessary if society is to survive. The very development of the material preconditions for freedom makes the achievement of freedom a social necessity.

If humanity is to live in balance with nature, we must turn to ecology for the essential guidelines of how the future society should be organized. Again, we find that what is desirable is also necessary. Man's desire for unrepressed, spontaneous expression, for variety in experience and surroundings, and for an environment scaled to human dimensions must also be realized to achieve natural equilibrium. The ecological problems of the old society thus reveal the methods that will shape the new. The intuition that all of these processes are converging toward an entirely new way of life finds its most concrete confirmation in the youth culture. The rising generation, which has been largely spared the scarcity psychosis of its parents, anticipates the development that lies ahead. In the outlook and praxis of young people, which range from tribalism to a sweeping affirmation of sensuousness, one finds those cultural prefigurations that point to a future Utopia.

Though I devote most of my discussion to what is new in the current social development, I definitely do not mean to ignore what is old. Exploitation, racism, poverty, class

struggle and imperialism are still with us—and in many respects have deepened their grip on society. These issues can never fade from revolutionary theory and praxis until they are resolved completely. There is little I can contribute to these issues, however, that has not been exhaustively discussed by others. What justifies my Utopian emphasis is the nearly total lack of material on the potentialities of our time. If no effort is made to enlarge this meagerly explored area, even the traditional issues of the radical movement will appear to us in a false light—as traditional. This would distort our very contact with the familiar. Although the issues raised by exploitation are not supplanted by those of alienation, the development of the former is profoundly influenced by the development of the latter.

Let us turn to an example of what this means. The traditional workers' movement will never reappear. Despite rank and file revolts, "bread and butter" issues are often too well contained by bourgeois unionism to form the basis for the old socialist type of labor union. But workers may yet form radical organizations to fight for changes in the *quality* of their lives and work—ultimately for workers' management of production. Workers will not form radical organizations until they sense the same tension between what-is and what-could-be that many young people feel today. I believe they will have to undergo major changes in their values—and not merely those values that involve the factory, but those that involve their lives. Only when life issues dominate factory issues will factory issues be assimilated to life issues. Then the economic strike may one day become a social strike and culminate in a massive blow against bourgeois society.

That young people in working-class families have increasingly responded to the culture of their white middle-class peers is one of the most hopeful signs that the factory will not be impervious to revolutionary ideas. Once it has

taken root, a cultural advance, like a technological advance, is ever more widely diffused—particularly among people whose minds have not been hardened by conditioning and age. The youth culture, with its freedom of the senses and spirit, has its own innate appeal. The spread of this culture to the high schools and elementary schools is one of the most subversive social phenomena in the world today.

The articles in this book are a careful elaboration of the ideas raised in the foregoing pages. They appeal for a new emphasis on the problems of freedom, the environment, sex roles and lifestyle, and they advance broad Utopian alternatives to the present social order. These emphases, I am convinced, are absolutely indispensable to the development of the revolutionary project in America.

Most of the articles were written between 1965 and 1968, a mere few years ago by the calendar, but ages ago ideologically. The hippie movement was just getting underway in New York when "Ecology and Revolutionary Thought" was published, and the disastrous SDS convention of June 1969 had yet to occur when "Listen, Marxist!" was completed. Most of the articles were published in *Anarchos* magazine and as *Anarchos* pamphlets. A few were published in underground papers or republished in "New Left" collections. Except for some deletions and the inclusion of several paragraphs, most of my changes have been stylistic.

One article, "The Forms of Freedom," has been substantially rewritten to remove any misunderstanding about my views on workers' councils. That these forms will be necessary to take over and operate the economy in a post-revolutionary period is a view I've held for many years—with the proviso, of course, that the councils (I prefer the term "factory committees") are controlled completely by workers' assemblies. Originally, this article limited its discussion of workers' councils to a critique of their defects

as policy-making bodies. In rewriting portions of "The Forms of Freedom" I have tried to distinguish the function of these councils as administrative organs from policy-making organs.

The dedication of this book to Josef Weber and Allan Hoffman is more than a sentimental gesture to two of my closest comrades. Josef Weber, a German revolutionary who died in 1958 at the age of fifty-eight, formulated more than twenty years ago the outlines of the Utopian project developed in this book. Moreover, for me he was a living link with all that was vital and libertarian in the great intellectual tradition of German socialism in the pre-Leninist era. From Allan Hoffman, whose death in a truck accident this year at the age of twenty-eight was an irreparable loss to the commune movement in California, I acquired a broader sense of the totality sought by the counterculture and youth revolt.

I owe very much to my sisters and brothers in the *Anarchos* group for a continual cross-fertilization of ideas, as well as for the warmth of real human relationships. In a sense, what is of worth in this book draws from the insights of many people whom I knew on the Lower East Side in New York, at Alternate U, and in groups and collectives throughout the country.

To them—*Salud!*

Murray Bookchin  
New York  
August-October 1970

## Introduction to the Second Edition

It would be easy to revise this book, to "update" it and give it greater contemporaneity since its publication by Ramparts Books fifteen years ago. Several publishers have asked me to do so since the book went out of print in the early eighties. But I have resisted, often unconsciously. There are works that should not be touched — and *Post-Scarcity Anarchism* is perhaps one of them. Whether deservedly or not, the book has entered into the literature of modern anarchism and voices in a reasonably coherent way some of the more inspired ideals of the sixties. To alter the book would be to violate a wondrous period of history itself — a period that produced a new, almost magical romance with life that I regard as imperishable if the human spirit is to come into its fulfillment.

It is also a book that was more influential than many ecological and radical theorists are likely to admit. I still hear its thoughts echoed in widely disparate places. That an ecological perspective had a rich radical content and would surface as an issue that socialist and anarchist theorists would be obliged to deal with was a very remote idea in the early sixties, however commonplace it has become today.

In any case, the book's sale ran into many thousands in North America and Europe. Some of its essays, particularly "Listen, Marxist!" (1969), were circulated in sizable numbers — not only in its original pamphlet form which I left unsigned, but in anthologies and as articles in the widely read "underground press" of the time. Much the same can be said for "Ecology and Revolutionary Thought," which I initially printed in my theoretical newsletter, *Comment*, in 1964 and republished a year later in the British monthly *Anarchy*.

The past fifteen years since the book's publication, however, have seen major changes in the radical "constituency" for which it was written. American radicalism has indeed made its "long march through the institutions," to use Rudi Dutschke's phrase, from the stormy student campuses of the sixties to the more serene faculty rooms of the eighties. Its buoyant populism has been abandoned for a restful Marxism. The journey, far from widening the horizon of the Marxist "professorial," to use Theodore Draper's term, has turned it into a more "discriminating" body, a word I use in a highly partisan sense. Today, almost anyone's book will make its way into the bibliographies of this professoriat if it is labelled "Marxist," irrespective of the hodge-podge of ideas the term is obliged to encompass. Use the word "anarchist," and the book is likely to be consigned to academic oblivion, even such historically important writers as a Peter Kropotkin or a Paul Goodman.

Which is not to say that I am convinced that these writers will disappear from the radical tradition: there are more long-range factors that ultimately single out pioneering books and ideas from epigones who try to restale them in less original and more socially acceptable ways. What troubles me about epigonic writing is the way it obscures and hybridizes ideas. It is disconcerting, to say the least, to see attempts to meld an ecologism that is clearly libertarian in its view of nature with a Marxism that is structured around the dominion of nature as a historic desideratum. Not only do such efforts violate the meaning of social ecology (as I choose to call my ideas) but also the thrust of Marx's own ideas. Just as I stress in my writings the fecundity, creativity, and complexity of nature as a potential "realm of freedom," so Marx's writings deal with nature as "slyngy," as mere object for human exploitation, and as a grim "realm of necessity" that dominates "man" in his quest for a liberated world — a world liberated not only from human dominion but the "dominion" of humanity by nature.

Indeed, Marx's justification for the emergence of class society and the State, not to speak of his "class analysis," stems from an underlying imagery of the oppressed "savage" who must "wrestle" with an unyielding, intractable natural world. The Victorian, largely *bourgeois*, origins of this imagery is an issue I have discussed in some detail in other books.\* To wed this grim drama of social development to a libertarian conception of nature as fecund, creative, and a potential "realm of freedom" is not merely sloppy thinking; it is grossly obscurantist. One can always, to sure, trot out a Gramsci or a Marcuse to paper over blatant contradictions that deserve respect and serious resolution. But to ignore them by prudently casting a veil of silence over works that seek to explore them with care is to divest ideas of their integrity and denature critical thinking as such.

What also troubles me is the moral condition of contemporary radicalism. There was a time, even as recently as the early thirties, when radicals of all kinds formed an ethical community, despite the many ideological differences that divided them. Whether as socialists, anarchists, syndicalists, or populists, they shared their views in free discourse, defended each other's rights, and even aided each other in publishing works that were ordinarily proscribed by the bourgeois press. Anarchists like Emma Goldman could find solace and help from Marxists like John Reed in times of difficulty, and anarchists like Sacco and Vanzetti rallied universal support from the Left, including Communists, despite their explicit criticisms of Soviet Russia.

These days are gone. The Left, today, is not only fragmented; it is closeted into dogmatic strongholds, and many of its members are notable not only for their lack of political influence but their professorial spitefulness. Polemic has lost its fire and

\* See particularly my essay "Marxism as Bourgeois Sociology" in *Toward an Ecological Society* (Montreal: Black Rose Books, 1980), and my overall critique of Marxism in *The Ecology of Freedom* (Palo Alto: Cheshire Books, 1982).

honesty. It suffers from the sterility of the specialist's "journal": jargonized, stilted, pedantic, insidiously backbiting, and unrestrained in its capacity to plagiarize. Socialism has become an industry and its literary works are commodities. They are often vended by ambitious careerists who have long traded away their political ideals for their professional status. The "New Left" has aged badly. It lives in spiteful hatred of its own youth and in fear of a revival of student militancy, a revival that may jeopardize its academic positions and peer recognition.

In many cases, a strangely symbiotic relationship exists between the academic Right and its leftist counterparts: a few scholarly Marxists are not only a *sine qua non* for a sophisticated college curriculum, but departments, even control of academic journals and societies, are divided between Right and Left with an unspoken understanding that the stability of a university, even the effective control of the student body, depends upon a delicate balance of forces between the two and a "pluralism" that replaces intellectual stimuli by paralysis. I need hardly say that in this academic ecumene, anarchists are literally too gauche to have a place in the academic firmament and their literature must be closed out of reading lists and course adoptions. If there is a reasonable amount of peace in the academy today, it is due not only to the careerism of students in an economically precarious world, but the careerism of their "radical" professors in an academically tight market. The "professoriat" has become an interest in its own right and strategically tends to function more as a safety valve for student dissent than a stimulus — a fact which more intelligent conservatives appreciate only too well.

In rereading *Post-Scarcity Anarchism*, I find its sixties rebelliousness to be a healthy antidote to the prevailing mood of calculated disenchantment and reformism that is so prevalent within the "radical" movement today. The book spoke to a time when words like "revolution," "uprising," and even

"bourgeoisie," were not seen as exotic terms. At the same time it was meant to be a careful correction of the revolutionary fervor that took possession of the young radicals I knew at the time: their earnest belief that revolution was imminent. (See pp. 34-35.) Already middle-aged in the sixties with a long experience in the Left of the thirties behind me, I tried to warn my younger comrades that "there is no 'revolutionary situation' at this time in America..." Indeed, as I wrote, "There is no immediate prospect of a revolutionary challenge to the established order." Rather, there is "a greater susceptibility to radical ideas than at any time since the populist resurgence of seventy years ago... [but] still no reason to believe that the bulk of white America will accept, much less support, the idea of revolutionary change at the present time." These lines were published in the first issue of *Anarchos*, a magazine I launched in 1967 with the cooperation of a few friends in New York's Lower East Side.\* What troubled me profoundly was the likelihood that revolutionary expectations among radical young people were outpacing reality — a fear that was more than amply justified, as the seventies were to show.

Yet the sixties had done wondrous things, many of which are sedimented into American life. Its linkage of the personal with the political, of esthetic fantasy with social reality, of a nonhierarchical society with a classless one, of libertarian process with revolutionary ends — all, not to speak of its celebrated flood of experiments in communal living, sexual freedom, radical changes in dress, diet, educational techniques, and culture as such, were latently revolutionary and expressly Utopian. The notion, so prevalent today, that this constellation of what was to be called a "counterculture" has been "coopted" is grossly false. That business, ever on the lookout for new commercial opportunities, used bits and pieces of the counterculture to its profit is not evidence of its cooptation but rather of its

\* See Robert Keller (pseud.): "Revolution in America," *Anarchos*, No. 1, February, 1968, p. 3.

fragmentation. One could say the same of the Paris Commune of 1871 because the Rothschilds offered to meet its monetary needs. To have coopted the counterculture as a *whole*, even in the name of profit, would have planted a revolutionary way of experiencing reality in the very heart of the system.

In any case, America could not accept these social and cultural changes overnight. To achieve them, even in part, would have required years of enlightenment. The "New Left" and the counterculture, initially so generous, populist, and anarchic in character, adopted a self-righteous and dogmatic stance as the years went by. The Vietnam War and the "cultural revolution" in China did these movements no service; as Barbara Garson has observed somewhere, it gave them a "bandwagon" to hitch on to, a phenomenon we are witnessing today in the case of Nicaragua. That the sixties opposed American imperialism is indubitably creditable and admirable, but certainly not its adoption of Vietnam and China as "models" of revolutionary wisdom and a new society. Disconnected from the American experience, the "New Left," became increasingly isolated, even more than the counterculture, which was already hemorrhaging from its own entanglement with drugs, musical impresarios, and self-anointed gurus. Intolerance replaced an understanding desire to educate the people; Marxist-Leninist dogma, more closely akin to Stalinism than Marxism, filtered through a political movement whose promising beginnings had been sidetracked into a form of cultural terrorism, as intolerant as the cultural conventions it professed to oppose.\* Expectations for social change began to exceed the real possibility for achieving them so that failure, when it came, virtually demolished sizable movements that seemed to have limitless possibilities for growth.

\* Readers who still have a good knowledge of the period would do well to contrast the good-natured playfulness of the Dutch *Provos* with the repellent dogmatism of the French Situationists. The full measure of the degeneration that occurred between 1965 and 1968 can be understood by placing these two tendencies in juxtaposition to each other.

America's vicious reaction to the shootings at Kent State University — "the National Guard should have shot more!" was the characteristic reply of angry parents to their shocked children — the popularity of Nixon, and finally the onset of economic crises, placed a final seal on the closing of the sixties.

What stands out most sharply about this era was its innocence. The cultural upwelling that tried to enchant everyday life founded on its inability to understand the historic trends that produced it. Everyday life, in effect, concealed the need to grasp the larger social context in which the "New Left" and the counterculture flourished. What was painfully lacking was the maturing, steadyng effect of consciousness and a theoretical coherence of ideas which would have united the disparate threads of the "Movement," as it came to be called, giving it meaning, a sense of direction, and ultimately the organizational structures that were needed to interlink it and make it socially effective. Marxism, with its gospel of "class analysis" and economic determinism, functioned as an inertial drag on the "Movement," not as a clarifying light. For the "Movement" was nothing if it was not *transclass*: people united by age, a sense of community, ethnically, and, later, by gender — not by their status in the "relations of production." Lacking an adequate theoretical framework, indeed rooted in a typically American framework that eschewed ideas and the value of theory, the "Movement," beleaguered by growing uncertainties about its identity, became afraid of itself. It was seized by fear: fear of its direction, isolation, exploitation, lack of power a loss of self-assurance that came from violated innocence, and its vulnerability to the sharks — commercial and lumpen — that began to encircle it. Finally it succumbed to the economic shocks that raised serious doubts about its material viability. The sudden scramble of young people from New York's Lower East Side after several highly publicized drug-related murders, the premature symbolic "burial of the hippie" in San Francisco's Haight-Ashbury district, and the stormy immolation of the Students for a Democratic Society at its Chicago convention

in June 1969, essentially brought the era to an end.

The sixties will not recur — nor should it. What it addressed was a sense of disempowerment, alienation, displacement, and a need for existential meaning which a period, rich in the goodies that filled a vacuous life, could not supply. Above all, it sought an authentic and creative form of community. Not that these problems are unique to the sixties. They have existed in different forms and degrees since the end of the Second World War. The distinctive nature of the era lay in the fact that it saw the decay of a traditional society side-by-side with an unprecedented period of material abundance. The tension between the reality of social decay in a cultural sense and the prospect of social reconstruction in a material sense unavoidably produced unrest on the one hand and Utopian visions on the other. Blacks provided the unrest in ghetto uprisings on a scale that had never been seen before, a product not only of their growing misery but also of their rising expectations. Compared to the ghetto explosions, the campus "revolts" were fairly tame affairs, but necessary ones. White youth, largely middle-class in background, provided the necessary sense of vision, such as it was or hoped to be.

But both were minorities within minorities. Black militants were barely accepted by their own people, except when a sense of shock was needed to give their more "responsible" leaders political clout. Leftist and countercultural youth were not really accepted by the majority students and the ordinary run of young people for whom they professed to speak, and, in the end, were more frightening, with their diet of dogmas and judgemental behavior, than inspiring. Sizable as both currents in the sixties became, they never acquired the lasting allegiance of their own kind. Nor did they try to earn it by painstaking education and patient forebearance.

A future movement for basic social change will not satisfy the needs of our time — its sense of disempowerment, alienation, displacement, meaning, and community — unless it pieces

itself together *consciously*, bit by bit, with the aim of ideological clarity and theoretical coherence. Education, in my view, is the top "priority" for a radicalization of our time. To step rapidly out into another historic void will simply produce the same fear and sense of isolation that brought the sixties to an end. This education must speak clearly to the transclass phenomena — the re-emergence of "the People," as it were — with which the modern era started centuries ago, and it must deal with problems that are best defined as ethical, not simply economic.\* Only by a supreme act of consciousness and ethical probity can this society be changed fundamentally. That it needs "objective forces" to promote that consciousness and ethics over and beyond educators is clear enough, but I hold more than ever that the *study group*, not only the "affinity group," is the indispensable form for this time — especially in view of the appalling intellectual and cultural degradation that marks our era.

As to the "objective forces" at work that may yet open a new period of social reconstruction, I have no reason whatever to diminish the enormous importance I attached to ecological problems thirty years ago. "Ecology and Revolutionary Thought" is one of the most prescient works to appear in radical theory. Its scope, projections, and anticipations, seen from 1964 onward, are as valid today as they were more than twenty years ago. That my identification of "revolutionary thought" with anarchism has precluded its extensive use by the Marxist professoriat is testimony to an inquisitorial dogmatism, indeed an ideological fanaticism, that deserves the greatest contempt. Pilfered wholesale by many Marxists themselves, it stands as a lasting reproach to the myth that a radical "community" exists in the United States. The fact that ecological movements, at this writing, constitute the most serious source

\* See particularly my essay "Spontaneity and Organization" in *Toward an Ecological Society* (Montreal: Black Rose Books, 1980).

of social opposition in Germany is a reminder that the essay's prognoses justify the emphasis I give to it in this foreword.

So, too, is the importance of feminism — particularly ecofeminism, which has drawn a good deal of inspiration from the essay. Whether ecofeminism will go beyond the small-group syndrome that tends to marginalize it and bypass the liberal politics of the National Organization of Women (NOW) by becoming part of a larger, hopefully libertarian *Green* movement in the English-speaking world remains to be seen. The tendency of leftist feminists to withdraw into themselves is a problem that cannot be overlooked. It stands in flat contradiction to the justly universal claims of feminism in its more advanced forms to speak for "life on earth" against the assaults of patriarchalism, market competition, and a sensibility of domination and militarism.

The peace movement, another transclass "historic force," is faced with much the same problem of exclusivity and scope. The attempt to gauge its successes or failures by whether it can prevent the siting of nuclear missiles, bring the "superpowers" to the "negotiating table," or achieve appreciable arms reduction reveals a disturbing degree of naivete. Its authentic and most on-going goal must ultimately be to oppose *militarism*, not only to advocate disarmament. This means that its basic orientation falls into the province of social ecology: to replace the hierarchical and domineering sensibility and social relations that link the domination of nature with the domination of human by human. No less than feminism, the peace movement must become part of a larger whole, a more encompassing coordination of the many separate threads, vital as each may be in its own right, into a well-focused and ultimately libertarian political movement.

Finally, the popular impulse toward community, which today stands in flat opposition to a homogenizing, atomizing, and privatizing urbanism — one that threatens to destroy both the city and the countryside — has moved to the forefront of the "forces" to which I have alluded. English socialism today is

riddled by movements or tendencies that emphasize the locality rather than the nation-state, a new "local socialism" from which there is much to be learned. In any case, it is only on the local level — in the village, town, city, or neighborhood — that a new politics can be developed, one which brings together all of these "forces" as a form of ecological politics. Here, in municipalities, where people live out their lives in the most *immediate* and *personal* sense, we find the locus of real popular power. This public sphere provides the existential arena that makes for citizenship in an active sense. Social ecology brings all of these threads together in its opposition to hierarchy and domination as a critical theory and its emphasis on participation and differentiation as a reconstructive theory.

Elsewhere, I have drawn a sharp distinction between politics and statecraft.\* Suffice it to say that politics, in my view, is the recovery of the Greek notion of a local public sphere — the municipality — in contrast to the statecraft of the nation-state which we have so mistakenly designated as "politics." We have yet to give enough attention to the city as a terrain for citizenship, self-empowerment, mutual aid, and a shared sense of *humanitas* that transcends the parochialism of tribal society and avoids the chauvinism of the nation-state. Yet the radical tradition is filled with revolutionary movements structured around the neighborhood or the city itself (the Parisian sections of 1793-94, the Paris Commune of 1871, and the town-meeting democracy of New England and the American Revolution, to cite only a few). We have yet to reclaim the democratic content of the great revolutions that liberal and Marxian historiography designate as "bourgeois" — an interpretation with which I emphatically disagree. This democratic content, I hold, has a distinctly libertarian core and speaks directly to existing lib-

\* See my "Theses on Libertarian Municipalism" in *Our Generation*, Vol. 16, Nos. 3 & 4, my new introduction to *The Limits of the City* (Montreal: Black Rose Books, 1986), where the article is republished, and my forthcoming book *Urbanization Without Cities* (San Francisco: Sierra Club Books, 1986).

ertarian traditions in America and possibly in Europe. Tragically, we have lost contact with our own radical traditions in Western society and, due in no small measure to Marxism-Leninism, have replaced them with ideologies and a vocabulary that is utterly alien to our own communities.

What I have tried to summarize are the issues and ideas that have come to the forefront of society since *Post-Scarcity Anarchism* was published. There was no environmental movement when I wrote "Ecology and Revolutionary Thought" (1964); no "appropriate technology" movement when I wrote "Toward a Liberatory Technology" (1965); no communitarian movement of a political nature when I wrote "The Forms of Freedom" (1968). It should be kept in mind that proposals for using solar and wind energy, for example, had been abandoned by specialists in the field when my essay on technology was written, and no serious attention was given to community as a political phenomenon when I explored the need for liberatory institutions. For the traditional Left, these issues could have existed on the moon. Not only would it take a decade or more for Marxists to regard these issues as more than trivial but to desist from treating them as "petty bourgeois" at best or outright "reactionary" at worst.

For the most part, my ideas since writing *Post-Scarcity Anarchism* have expanded from the bases charted out in the book. There is very little I would want to discard since it was written. Rather, I have elaborated ideas that were dealt with in a fairly scanty fashion. Thus, I would want to develop "Forms of Freedom" to include my ideas on libertarian municipalism, deepen my criticism of Marxism in "Listen, Marxist!" and expand my discussion of technics and work in "Towards a Liberatory Technology." I would want to excise my use of Brecht's recipe for cynical socialism in the closing lines of the essay and temper the importance I gave the technological "preconditions" for freedom.

Do I hold that the abolition of "scarcity" is such a "pre-

condition" in the *historic* sense emphasized by Marx? My acceptance of this view, largely an inheritance of Marxists who deeply influenced my thinking in the fifties, is not as unqualified as it would seem to be in a quick reading of the book. The original introduction, it should be noted, deals with scarcity more as a contemporary issue than a historical one. As I note: "Whether this long and tortuous development [around material scarcity] could have followed a different, more benign, course is now irrelevant. The development is now behind us" (p. 10). This equivocal statement was deliberately introduced fifteen years ago because I was doubtful about the concept of scarcity in a historical sense even as I seemed to argue for its role in many parts of the book. Viewed as a drama of history that our era has resolved technologically, I would have to say that such an interpretation is now unsatisfactory in my eyes, although the role of material deprivation in the past cannot be ignored. Yet I would still title this book *Post-Scarcity Anarchism* if I were to rewrite it. Capitalism is more of an economy than a society, as Karl Polanyi pointed out years ago. In dissolving most of the cultural, traditional, and ideological ties that kept needs under a measure of control, the market system has created a phenomenon that never existed in precapitalist or traditional society as a whole: a fetishization of needs, not only Marx's celebrated "fetishization of commodities." As I indicate in *The Ecology of Freedom*: "Needs, in effect, become a productive force, not a subjective force. They become blind in the same sense that the production of commodities becomes blind... To break the grip of the 'fetishization of needs,' to dispel it, is to recover the *freedom of choice*, a project that is tied to the freedom of the *self to choose*."<sup>\*</sup> Post-scarcity is a "'precondition' under *capitalism* for exorcising the hold of the economy over society, for creating a sufficiency in goods that permits the individual to choose what he or she *really* needs or wants, in

\* Murray Bookchin: *The Ecology of Freedom* (Palo Alto: Cheshire Books, 1982), pp. 68-69.

short, for demystifying the economic by exploding it from within — by sheer abundance — as an all-presiding agent over the human condition. Put simply: under capitalism we must try to achieve a level of abundance that renders abundance meaningless and permits us to take possession of ourselves as free people, capable of choosing the lifeways that suit us.

By the same token, *Post-Scarcity Anarchism* does not fetishize technology. Quite to the contrary: the reader is warned early on in the book that "Technology and the resources of abundance furnish capitalism with the means of assimilating large sections of society to the established system of hierarchy and authority. They provide the system with the weaponry, the detecting devices and the propaganda media for the threat as well as the reality of massive repression. By their centralistic nature, the resources of abundance reinforce the monopolistic, centralistic and bureaucratic tendencies in the political apparatus. In short, they furnish the State with historically unprecedented means for manipulating and mobilizing the entire environment of life — and for perpetuating hierarchy, exploitation, and unfreedom" (pp. 34-35).

Lest my emphasis on the liberatory potential of technology be mistaken as an argument for technocracy, the essay "Towards a Liberatory Technology" introduced themes that have taken on vastly greater significance over the years. The image that technology is now a matter of systematic design, not simply of inspired invention; the enormous range of uses to which "cybernated" devices lend themselves; the use of terms like "miniaturization" to apply to technology as a whole; the notion that there is an ecological approach to technology that takes the form of *ensembles* of productive units, energized by solar and windpower units — all, taken together, are still pioneering concepts. They have yet to be fully assimilated by many environmentalists. The argument that we must recover local regional resources that were abandoned with the rise of a national division of labor is a pillar of the best bioregional thinking of the eighties. Finally, "The Forms of Freedom," written sev-

enteen years ago, still constitutes the basis for my views on libertarian municipalism (including the assembly as the authentic basis for democracy) and for my criticism of syndicalism. There is much I hope to expand in this essay in a future book that will bear the same title. But there is little I would want to change in it.

Limitations of space do allow me to itemize point by point the ideas that are as relevant today as they were in the sixties. Apart from my qualifying remarks on scarcity and my use of words like "preconditions," *Post-Scarcity Anarchism* forms an indispensable introduction to views I have elaborated in later books and articles. Nor do I have any reason to eschew the word "anarchist." The libertarian tradition is as close to me as it was two decades ago and I freely align with it as a proponent, despite criticisms I have voiced of certain tendencies within it. Its persistence is a deserved one. And the many people in the ecology movement, not to speak of those on the Left who acknowledge their debt to this tradition, as well as those who use it without attribution, are living evidence of its value for later generations.

Changing shifts in the world economy and technology have made a number of items in the book somewhat dated. The United States is no longer the producer of "more than half of the world's good" (pages 23 and 64), but rather a good deal less than a third. This relative decline, however, has not altered my view that it is the "keystone" in the imperial arch of world capitalism. Although its specific weight in production has diminished economically, its strategic position as a technological innovator and its military power is as great as ever. Nor can we judge the leading role a country can play by production figures at any given time, as the Axis powers discovered to their grief during the Second World War when a depression-ridden America with some of the lowest production figures per capita in the world entered the war.

As to details: we can no longer speak of the need to increase

electric-power production fivefold in the remaining years of the century (p. 64). The estimates are now much smaller. Research on thermoelectric junctions has been supplanted by photoelectric junctions as of this writing (p. 125). Electric cars, with their demands for electric power, might do more to increase pollution from power plants than to diminish it (p. 75). My inclusion of nuclear fuels as part of a mosaic of energy sources was perhaps understandable two decades ago, especially since I had so-called "clean" thermonuclear sources in mind, but it now cuts across the entire grain of my thinking (p. 74). The DDP-124 computer runs at 1.75 million cycles a second, not 1.75 "billion." Whether this was a typographical error, I do not know, but in any case it is wrong.\*

I have been warned by a publisher that the student-worker movement that developed in France during May-June 1968 has all but been forgotten and my comments on it have little relevance. Here, I feel obliged to emphasize that the contemporaneity of an event is no guide to whether it should or should not be discussed. Not only has an entire generation described itself as the "people of '68," particularly in Europe, where the year and its events are regarded as the highpoint of the sixties; the '68 events themselves are too important in terms of the message they offered and the way they unfolded to be neglected. The failure of that great movement is no reason for forgetfulness but, to the contrary, reason for the most searching analyses. The two short pieces on "May-June," as it was called nearly twenty years ago, provide only part of such an analysis but one that is indispensable to a discussion of the way in which social movements develop in our era and the way in which they may unfold in the future.

The intellectual and political elaborations I have made since *Post-Scarcity Anarchism* was published are too complex to

\* I wish to thank Laurence Moore of Ramparts Press for singling out most of these errors in the book. Other observations which Larry made are interesting enough, but they are largely differences about our interpretation of social issues rather than mistakes of fact.

develop here. My criticisms of Marxism, which were anticipatory by any standards, have become more complex and fundamental since the publication of "Listen, Marxist!" Yet, on rereading this work, I find that it is as relevant today as it was when it first appeared at the crucial SDS convention of June 1969. The work is still being republished and its impact on potential converts to Marxism is still as powerful as it was many years ago. More elaborate criticisms for which the essay lays the basis appear in *Toward an Ecological Society* and *The Ecology of Freedom*. My prediction in the pamphlet that soldiers could play a revolutionary role, not simply workers, was to acquire flesh-and-blood dimensions in Portugal, when rank-and-file troops proved to be more revolutionary than many socialists and their working-class followers. "Listen, Marxist!" it should be noted, was never seriously challenged by the Marxist press in the sixties and seventies. Despite its enormous distribution, it was carefully enveloped in a conspiracy of silence which persists to this very day. Indeed, many of its ideas were simply appropriated by so-called "neo-Marxists" years after its publication and hybridized with elements of the Marxian canon.

Since the publication of *Post-Scarcity Anarchism* my development of social ecology has moved ahead by enormous strides and now includes works on nature philosophy, ecological ethics, criticisms of sociobiology and other reactionary forms of biologism, and a more ecological approach to natural evolution. My views on technology and social reconstruction, particularly ecological politics based on libertarian municipalism, fill hundreds of pages in *Towards an Ecological Society*, *The Ecology of Freedom*, the Black Rose edition of *The Limits of the City*, and my latest book, *The Modern Crisis*, a common venture of Black Rose Books in Canada and New Society Publishers and the Institute for Social Ecology in the United States. Lastly, my book *Urbanization Without Cities* will be published as of this writing by Sierra Club Books in San Francisco. This volume develops themes to which *The Limits of the City* forms an indispensable introduction. The two books

complement each other and should be explored by readers who are interested in an ecological interpretation of politics and the recovery of genuine citizenship.

I have found "purity" nowhere in this world except in the mature music of Mozart and the moral probity of Fermin Salvochea, the Spanish anarchist "saint." Every idea advanced in this book is, in some sense, very "impure" — and, worse, has its antithesis in ideas and movements that are grossly wrong. Social ecology, a term that is already finding its way into the academic mainstream, is being cheapened by its antithesis in sociobiology, antihumanism, and outright ecofascism. Nature philosophy, such as I have advanced in my own writings, has its antithesis in an all-inclusive application of systems theory, reductionism as a mystique of a universal "Oneness," a myth of "interconnectedness" that loses sight of all distinctions or "mediations" (to use Hegel's term), and outright appeals to "blood-and-soil" chauvinism or dialectical materialism. An ecological ethics based on freedom has its antithesis in deterministic doctrines of "natural law," the "morality of the gene," social Darwinism, and the ethics of the "lifeboat" and "triage." Libertarian visions of community and politics have their antithesis in parliamentary politics, party organization, and electoral mobilization as distinguished from education. There is no magic strategy or pure dogma that provides us with principles or a practice that stands above the conflicts between right and wrong or good and evil — unless it is so far removed from the real world that it is insulated by distance and marginality from the taint of experience. I do not have to be reminded that social ecology can breed its opposite in utterly reactionary perversions of its truth. Or that it can be coopted in name and tarnished in spirit. Much of my life has been devoted to writing critical articles against those who pervert or infiltrate authentically ecological views with utterly alien notions that have been bred by explicit reactionaries as well as self-styled "radicals."

What the sixties should teach us, then, is that there is no substitute for consciousness. Truth will emerge only from insight,

critical thinking, a reality principle that does not sacrifice principles to opportunistic gains, a moral probity that can resist descent into the surrender of ideals. Education remains on the order of the day — indeed, more so today than earlier because of the complexity of our problems and the massive drift toward intellectual vulgarity.

What the sixties should also teach us is that a counterculture is not enough — important as it is. What we need are the firm skeletal structures to support such a new culture — notably, *counterinstitutions*. This confronts us with the need to create a *political* movement that is libertarian and rescues the word "politics" from the ignominy of statecraft. Impure as they may be, there are still areas of life — notably, the municipalities — that can be reclaimed as a new political sphere by an active citizenry in popular assemblies, confederated, and ultimately developed into a counterpower with counterinstitutions that stand opposed to those of the nation-state. The eighties and sixties now face each other in direct confrontation — not as conflicting eras that raise opposing alternatives, but as complementary ones that, taken together, provide the opportunity for fuller alternatives than those which existed twenty years ago and today. Whether we can bring these complementary decades together, each of which has so much to give to the other, in a reconstructive politics that opens a new way to our present-day impasse will determine the future of this century and much of the one to come.

Murray Bookchin  
September 1985

# Post-Scarcity Anarchism

## *PRECONDITIONS AND POSSIBILITIES*

All the successful revolutions of the past have been particularistic revolutions of minority classes seeking to assert their specific interests over those of society as a whole. The great bourgeois revolutions of modern times offered an ideology of sweeping political reconstitution, but in reality they merely certified the social dominance of the bourgeoisie, giving formal political expression to the economic ascendancy of capital. The lofty notions of the "nation," the "free citizen," of equality before the law," concealed the mundane reality of the centralized state, the atomized isolated man, the dominance of bourgeois interest. Despite their sweeping ideological claims, the particularistic revolutions replaced the rule of one class by another, one system of exploitation by another, one system of toil by another, and one system of psychological repression by another.

What is unique about our era is that the particularistic revolution has now been subsumed by the possibility of the generalized revolution—complete and totalistic. Bourgeois society, if it achieved nothing else, revolutionized the means of production on a scale unprecedented in history. This technological revolution, culminating in cybernation, has created the objective, quantitative basis for a world without class rule, exploitation, toil or material want. The means now exist for the development of the rounded man, the total man, freed of guilt and the workings of authoritarian modes of training, and given over to desire and the sensuous apprehension of the marvelous. It is now possible to conceive of man's future experience in terms of a coher-

ent process in which the bifurcations of thought and activity, mind and sensuousness, discipline and spontaneity, individuality and community, man and nature, town and country, education and life, work and play are all resolved, harmonized, and organically wedded in a qualitatively new realm of freedom. Just as the particularized revolution produced a particularized, bifurcated society, so the generalized revolution can produce an organically unified, many-sided community. The great wound opened by propertied society in the form of the "social question" can now be healed.

That freedom must be conceived of in human terms, not in animal terms—in terms of life, not of survival—is clear enough. Men do not remove their ties of bondage and become fully human merely by divesting themselves of social domination and obtaining freedom in its *abstract* form. They must also be free *concretely*: free from material want, from toil, from the burden of devoting the greater part of their time—indeed, the greater part of their lives—to the struggle with necessity. To have seen these material preconditions for human freedom, to have emphasized that freedom presupposes free time and the material abundance for abolishing free time as a social privilege, is the great contribution of Karl Marx to modern revolutionary theory.

By the same token, the *preconditions* for freedom must not be mistaken for the *conditions* of freedom. The *possibility* of liberation does not constitute its *reality*. Along with its positive aspects, technological advance has a distinctly negative, socially regressive side. If it is true that technological progress enlarges the historical potentiality for freedom, it is also true that the bourgeois control of technology reinforces the established organization of society and everyday life. Technology and the resources of abundance furnish capitalism with the means for assimilating large sections of society to the established system of

hierarchy and authority. They provide the system with the weaponry, the detecting devices and the propaganda media for the threat as well as the reality of massive repression. By their centralistic nature, the resources of abundance reinforce the monopolistic, centralistic and bureaucratic tendencies in the political apparatus. In short, they furnish the state with historically unprecedented means for manipulating and mobilizing the entire environment of life—and for perpetuating hierarchy, exploitation and unfreedom.

It must be emphasized, however, that this manipulation and mobilization of the environment is extremely problematical and laden with crises. Far from leading to pacification (one can hardly speak, here, of harmonization), the attempt of bourgeois society to control and exploit its environment, natural as well as social, has devastating consequences. Volumes have been written on the pollution of the atmosphere and waterways, on the destruction of tree cover and soil, and on toxic materials in foods and liquids. Even more threatening in their final results are the pollution and destruction of the very ecology required for a complex organism like man. The concentration of radioactive wastes in living things is a menace to the health and genetic endowment of nearly all species. Worldwide contamination by pesticides that inhibit oxygen production in plankton or by the near-toxic level of lead from gasoline exhaust are examples of an enduring pollution that threatens the biological integrity of all advanced life-forms—including man.

No less alarming is the fact that we must drastically revise our traditional notions of what constitutes an environmental pollutant. A few decades ago it would have been absurd to describe carbon dioxide and heat as pollutants in the customary sense of the term. Yet both may well rank among the most serious sources of future eco-

logical imbalance and may pose major threats to the viability of the planet. As a result of industrial and domestic combustion activities, the quantity of carbon dioxide in the atmosphere has increased by roughly twenty-five percent in the past one hundred years, and may well double by the end of the century. The famous "greenhouse effect" which the increasing quantity of the gas is expected to produce has been widely discussed in the media; eventually, it is supposed, the gas will inhibit the dissipation of the world's heat into space, causing a rise in overall temperatures which will melt the polar ice caps and result in the inundation of vast coastal areas. Thermal pollution, the result mainly of warm water discharged by nuclear and conventional power plants, has had disastrous effects on the ecology of lakes, rivers and estuaries. Increases in water temperature not only damage the physiological and reproductive activities of the fish, they also promote the great blooms of algae that have become such formidable problems in waterways.

Ecologically, bourgeois exploitation and manipulation are undermining the very capacity of the earth to sustain advanced forms of life. The crisis is being heightened by massive increases in air and water pollution; by a mounting accumulation of nondegradable wastes, lead residues, pesticide residues and toxic additives in food; by the expansion of cities into vast urban belts; by increasing stresses due to congestion, noise and mass living; and by the wanton scarring of the earth as a result of mining operations, lumbering, and real estate speculation. As a result, the earth has been despoiled in a few decades on a scale that is unprecedented in the entire history of human habitation of the planet.

Socially, bourgeois exploitation and manipulation have brought everyday life to the most excruciating point of vacuity and boredom. As society has been converted into a factory and a marketplace, the very rationale of life has

been reduced to production for its own sake—and consumption for its own sake.\*

### THE REDEMPTIVE DIALECTIC

Is there a redemptive dialectic that can guide the social development in the direction of an anarchic society where people will attain full control over their daily lives? Or does the social dialectic come to an end with capitalism, its possibilities sealed off by the use of a highly advanced technology for repressive and co-optative purposes?

We must learn here from the limits of Marxism, a project which, understandably in a period of material scarcity, anchored the social dialectic and the contradictions of capitalism in the economic realm. Marx, it has been emphasized, examined the *preconditions for liberation*, not the *conditions of liberation*. The Marxian critique is rooted in the past, in the era of material want and relatively limited technological development. Even its humanistic theory of alienation turns primarily on the issue of work and man's alienation from the product of his labor. Today, however, capitalism is a parasite on the future, a vampire that survives on the technology and resources of freedom. The industrial capitalism of Marx's time organized its commodity relations around a prevailing system of material scarcity; the state capitalism of our time organizes its commodity relations around a prevailing system of material abundance. A century ago, scarcity had to be endured; today, it has to be enforced—hence the importance of the

\* It is worth noting here that the emergence of the "consumer society" provides us with remarkable evidence of the difference between the industrial capitalism of Marx's time and state capitalism today. In Marx's view, capitalism as a system organized around "production for the sake of production" results in the economic immiseration of the proletariat. "Production for the sake of production" is paralleled today by "consumption for the sake of consumption," in which immiseration takes a spiritual rather than an economic form—it is starvation of life.

state in the present era. It is not that modern capitalism has resolved its contradictions\* and annulled the social dialectic, but rather that the social dialectic and the contradictions of capitalism have expanded from the economic to the hierarchical realms of society, from the abstract "historic" domain to the concrete minutiae of everyday experience, from the arena of survival to the arena of life.

The dialectic of bureaucratic state capitalism originates in the contradiction between the repressive character of commodity society and the enormous potential freedom opened by technological advance. This contradiction also opposes the exploitative organization of society to the natural world—a world that includes not only the natural environment, but also man's "nature"—his Eros-derived impulses. The contradiction between the exploitative organization of society and the natural environment is beyond co-optation: the atmosphere, the waterways, the soil and the ecology required for human survival are not redeemable by reforms, concessions, or modifications of strategic policy. There is no technology that can reproduce atmospheric oxygen in sufficient quantities to sustain life on this planet. There is no substitute for the hydrological systems of the earth. There is no technique for removing massive environmental pollution by radioactive isotopes, pesticides, lead and petroleum wastes. Nor is there the faintest evidence that bourgeois society will relent at any time in the foreseeable future in its disruption of vital ecological processes, in its exploitation of natural resources, in its use of the atmosphere and waterways as dumping areas for wastes, or in its cancerous mode of urbanization and land abuse.

Even more immediate is the contradiction between the

\* The economic contradictions of capitalism have not disappeared, but the system can plan to such a degree that they no longer have the explosive characteristics they had in the past.

exploitative organization of society and man's Eros-derived impulses—a contradiction that manifests itself as the banalization and impoverishment of experience in a bureaucratically manipulated, impersonal mass society. The Eros-derived impulses in man can be repressed and sublimated, but they can never be eliminated. They are renewed with every birth of a human being and with every generation of youth. It is not surprising today that the young, more than any economic class or stratum, articulate the life-impulses in humanity's nature—the urgings of desire, sensuousness, and the lure of the marvelous. Thus, the biological matrix, from which hierarchical society emerged ages ago, reappears at a new level with the era that marks the end of hierarchy, only now this matrix is saturated with social phenomena. Short of manipulating humanity's germ plasm, the life-impulses can be annulled only with the annihilation of man himself.

The contradictions within bureaucratic state capitalism permeate all the hierarchical forms developed and over-developed by bourgeois society. The hierarchical forms which nurtured propertied society for ages and promoted its development—the state, city, centralized economy, bureaucracy, patriarchal family, and marketplace—have reached their historic limits. They have exhausted their social functions as modes of stabilization. It is not a question of whether these hierarchical forms were ever "progressive" in the Marxian sense of the term. As Raoul Vaneigem has observed: "Perhaps it isn't enough to say that hierarchical power has preserved humanity for thousands of years as alcohol preserves a fetus, by arresting either growth or decay."<sup>3</sup> Today these forms constitute the target of all the revolutionary forces that are generated by modern capitalism, and whether one sees their outcome as nuclear catastrophe or ecological disaster *they now threaten the very survival of humanity*.

With the development of hierarchical forms into a threat to the very existence of humanity, the social dialectic, far from being annulled, acquires a new dimension. It poses the "social question" in an entirely new way. If man had to acquire the conditions of survival in order to live (as Marx emphasized), now he must acquire the conditions of life in order to survive. By this inversion of the relationship between survival and life, revolution acquires a new sense of urgency. No longer are we faced with Marx's famous choice of socialism or barbarism; we are confronted with the more drastic alternatives of anarchism or annihilation. The problems of necessity and survival have become congruent with the problems of freedom and life. They cease to require any theoretical mediation, "transitional" stages, or centralized organizations to bridge the gap between the existing and the possible. The possible, in fact, is all that can exist. Hence, the problems of "transition," which occupied the Marxists for nearly a century, are eliminated not only by the advance of technology, but by the social dialectic itself. The problems of social reconstruction have been reduced to practical tasks that can be solved spontaneously by self-liberatory acts of society.

Revolution, in fact, acquires not only a new sense of urgency, but a new sense of promise. In the hippies' tribalism, in the drop-out lifestyles and free sexuality of millions of youth, in the spontaneous affinity groups of the anarchists, we find forms of affirmation that follow from acts of negation. With the inversion of the "social question" there is also an inversion of the social dialectic; a "yea" emerges automatically and simultaneously with a "nay."

The solutions take their point of departure from the problems. When the time has arrived in history that the state, the city, bureaucracy, the centralized economy, the patriarchal family and the marketplace have reached their historic limits, what is posed is no longer a change in form but the absolute negation of *all* hierarchical forms *as such*.

The absolute negation of the state is anarchism—a situation in which men liberate not only "history," but all the immediate circumstances of their everyday lives. The absolute negation of the city is community—a community in which the social environment is decentralized into rounded, ecologically balanced communes. The absolute negation of bureaucracy is immediate as distinguished from mediated relations—a situation in which representation is replaced by face-to-face relations in a general assembly of free individuals. The absolute negation of the centralized economy is regional ecotechnology—a situation in which the instruments of production are molded to the resources of an ecosystem. The absolute negation of the patriarchal family is liberated sexuality—in which all forms of sexual regulation are transcended by the spontaneous, untrammeled expression of eroticism among equals. The absolute negation of the marketplace is communism—in which collective abundance and cooperation transform labor into play and need into desire.

#### SPONTANEITY AND UTOPIA

It is not accidental that at a point in history when hierarchical power and manipulation have reached their most threatening proportions, the very concepts of hierarchy, power and manipulation are being brought into question. The challenge to these concepts comes from a rediscovery of the importance of spontaneity—a rediscovery nourished by ecology, by a heightened conception of self-development, and by a new understanding of the revolutionary process in society.

What ecology has shown is that balance in nature is achieved by organic variation and complexity, not by homogeneity and simplification. For example, the more varied the flora and fauna of an ecosystem, the more stable the population of a potential pest. The more environmental diversity is diminished, the greater will the popula-

tion of a potential pest fluctuate, with the probability that it will get out of control. Left to itself, an ecosystem tends spontaneously toward organic differentiation, greater variety of flora and fauna, and diversity in the number of prey and predators. This does not mean that interference by man must be avoided. The need for a productive agriculture—itself a form of interference with nature—must always remain in the foreground of an ecological approach to food cultivation and forest management. No less important is the fact that man can often produce changes in an ecosystem that would vastly improve its ecological quality. But these efforts require insight and understanding, not the exercise of brute power and manipulation.

This concept of management, this new regard for the importance of spontaneity, has far-reaching applications for technology and community—indeed, for the social image of man in a liberated society. It challenges the capitalist ideal of agriculture as a factory operation, organized around immense, centrally controlled land-holdings, highly specialized forms of monoculture, the reduction of the terrain to a factory floor, the substitution of chemical for organic processes, the use of gang-labor, etc. If food cultivation is to be a mode of cooperation with nature rather than a contest between opponents, the agriculturist must become thoroughly familiar with the ecology of the land; he must acquire a new sensitivity to its needs and possibilities. This presupposes the reduction of agriculture to a human scale, the restoration of moderate-sized agricultural units, and the diversification of the agricultural situation; in short, it presupposes a decentralized, ecological system of food cultivation.

The same reasoning applies to pollution control. The development of giant factory complexes and the use of single- or dual-energy sources are responsible for atmospheric pollution. Only by developing smaller industrial units and diversifying energy sources by the extensive use

of clean power (solar, wind and water power) will it be possible to reduce industrial pollution. The means for this radical technological change are now at hand. Technologists have developed miniaturized substitutes for large-scale industrial operation—small versatile machines and sophisticated methods for converting solar, wind and water energy into power usable in industry and the home. These substitutes are often more productive and less wasteful than the large-scale facilities that exist today.\*

The implications of small-scale agriculture and industry for a community are obvious: if humanity is to use the principles needed to manage an ecosystem, the basic communal unit of social life must itself become an ecosystem—an ecocommunity. It too must become diversified, balanced and well-rounded. By no means is this concept of community motivated exclusively by the need for a lasting balance between man and the natural world; it also accords with the Utopian ideal of the rounded man, the individual whose sensibilities, range of experience and lifestyle are nourished by a wide range of stimuli, by a diversity of activities, and by a social scale that always remains within the comprehension of a single human being. Thus the means and conditions of survival become the means and conditions of life; need becomes desire and desire becomes need. The point is reached where the greatest social decomposition provides the source of the highest form of social integration, bringing the most pressing ecological necessities into a common focus with the highest Utopian ideals.

If it is true, as Guy Debord observes, that "daily life is the measure of everything: of the fulfillment or rather the non-fulfillment of human relationships, of the use we make of our time,"<sup>4</sup> a question arises: Who are "we"

\* For a detailed discussion of this "miniaturized" technology see "Towards a Liberatory Technology."

whose daily lives are to be fulfilled? And how does the liberated self emerge that is capable of turning time into life, space into community, and human relationships into the marvelous?

The liberation of the self involves, above all, a social process. In a society that has shriveled the self into a commodity—into an object manufactured for exchange—there can be no fulfilled self. There can only be the beginnings of selfhood, the *emergence* of a self that seeks fulfillment—a self that is largely defined by the obstacles it must overcome to achieve realization. In a society whose belly is distended to the bursting point with revolution, whose chronic state is an unending series of labor pains, whose real condition is a mounting emergency, only one thought and act is relevant—giving birth. Any environment, private or social, that does not make this fact the center of human experience is a sham and diminishes whatever self remains to us after we have absorbed our daily poison of everyday life in bourgeois society.

It is plain that the goal of revolution today must be the liberation of daily life. Any revolution that fails to achieve this goal is counterrevolution. Above all, it is *we* who have to be liberated, *our* daily lives, with all their moments, hours and days, and not universals like "History" and "Society."\* The self must always be *identifiable* in the revolution, not overwhelmed by it. The self must always be *perceivable* in the revolutionary process, not submerged by it. There is no word that is more sinister in the "revolutionary" vocabulary than "masses." Revolutionary libera-

\* Despite its lip service to the dialectic, the traditional left has yet to take Hegel's "concrete universal" seriously and see it not merely as a philosophical concept but as a social program. This has been done only in Marx's early writings, in the writings of the great Utopians (Fourier and William Morris) and, in our time, by the drop-out youth.

tion must be a self-liberation that reaches social dimensions, not "mass liberation" or "class liberation" behind which lurks the rule of an elite, a hierarchy and a state. If a revolution fails to produce a new society by the self-activity and self-mobilization of revolutionaries, if it does not involve the forging of a self in the revolutionary process, the revolution will once again circumvent those whose lives are to be lived every day and leave daily life unaffected. Out of the revolution must emerge a self that takes full possession of daily life, not a daily life that once again takes full possession of the self. The most advanced form of class consciousness thus becomes self-consciousness—the concretization in daily life of the great liberating universals.

If for this reason alone, the revolutionary movement is profoundly concerned with lifestyle. It must try to *live* the revolution in all its totality, not only participate in it. It must be deeply concerned with the way the revolutionist lives, his relations with the surrounding environment, and his degree of self-emancipation. In seeking to change society, the revolutionist cannot avoid changes in himself that demand the reconquest of his own being. Like the movement in which he participates, the revolutionist must try to reflect the conditions of the society he is trying to achieve—at least to the degree that this is possible today.

The treacheries and failures of the past half century have made it axiomatic that there *can be no separation of the revolutionary process from the revolutionary goal*. A society whose fundamental aim is self-administration in all facets of life can be achieved only by self-activity. This implies a mode of administration that is always possessed by the self. The power of man over man can be destroyed only by the very process in which man acquires power over his own life and in which he not only "discovers" himself but, more meaningfully, in which he formulates his self-

hood in all its social dimensions.

A libertarian society can be achieved only by a libertarian revolution. Freedom cannot be "delivered" to the individual as the "end-product" of a "revolution"; the assembly and community cannot be legislated or decreed into existence. A revolutionary group can seek, purposefully and consciously, to promote the creation of these forms, but if assembly and community are not allowed to emerge organically, if their growth is not matured by the process of demassification, by self-activity and by self-realization, they will remain nothing but forms, like the Soviets in postrevolutionary Russia. Assembly and community must arise within the revolutionary process; indeed, the revolutionary process must *be* the formation of assembly and community, and also the destruction of power, property, hierarchy and exploitation.

Revolution as self-activity is not unique to our time. It is the paramount feature of all the great revolutions in modern history. It marked the *journées* of the *sans-culottes* in 1792 and 1793, the famous "Five Days" of February 1917 in Petrograd, the uprising of the Barcelona proletariat in 1936, the early days of the Hungarian Revolution in 1956, and the May-June events in Paris in 1968. Nearly every revolutionary uprising in the history of our time has been initiated spontaneously by the self-activity of "masses"—often in flat defiance of the hesitant policies advanced by the revolutionary organizations. Every one of these revolutions has been marked by extraordinary individuation, by a joyousness and solidarity that turned everyday life into a festival. This surreal dimension of the revolutionary process, with its explosion of deep-seated libidinal forces, grins irascibly through the pages of history like the face of a satyr on shimmering water. It is not without reason that the Bolshevik commissars smashed the wine bottles in the Winter Palace on the night of November 7, 1917.

The puritanism and work ethic of the traditional left stem from one of the most powerful forces opposing revolution today—the capacity of the bourgeois environment to infiltrate the revolutionary framework. The origins of this power lie in the commodity nature of man under capitalism, a quality that is almost automatically transferred to the organized group—and which the group, in turn, reinforces in its members. As the late Josef Weber emphasized, all organized groups "have the tendency to render themselves autonomous, i.e., to alienate themselves from their original aim and to become an end in themselves in the hands of those administering them."<sup>5</sup> This phenomenon is as true of revolutionary organizations as it is of state and semi-state institutions, official parties and trade unions.

The problem of alienation can never be completely resolved apart from the revolutionary process itself, but it can be guarded against by an acute awareness that the problem exists, and partly solved by a voluntary but drastic remaking of the revolutionary and his group. This remaking can only begin when the revolutionary group recognizes that it is a catalyst in the revolutionary process, not a "vanguard." The revolutionary group must clearly see that its goal is not the seizure of power but the dissolution of power—indeed, it must see that the entire problem of power, of control from below and control from above, can be solved only if there is no above or below.

Above all, the revolutionary group must divest itself of the forms of power—statutes, hierarchies, property, prescribed opinions, fetishes, paraphernalia, official etiquette—and of the subtlest as well as the most obvious of bureaucratic and bourgeois traits that consciously and unconsciously reinforce authority and hierarchy. The group must remain open to public scrutiny not only in its formulated decisions but also in their very formulation. It must

be coherent in the profound sense that its theory is its practice and its practice its theory. It must do away with all commodity relations in its day-to-day existence and constitute itself along the decentralizing organizational principles of the very society it seeks to achieve—community, assembly, spontaneity. It must, in Josef Weber's superb words, be "marked always by simplicity and clarity, always thousands of unprepared people can enter and direct it, always it remains *transparent* to and controlled by all."<sup>6</sup> Only then, when the revolutionary movement is congruent with the decentralized community it seeks to achieve, can it avoid becoming another elitist obstacle to the social development and dissolve into the revolution like surgical thread into a healing wound.

### PROSPECT

The most important process going on in America today is the sweeping de-institutionalization of the bourgeois social structure. A basic, far-reaching disrespect and a profound disloyalty are developing toward the values, the forms, the aspirations and, above all, the institutions of the established order. On a scale unprecedented in American history, millions of people are shedding their commitment to the society in which they live. They no longer believe in its claims. They no longer respect its symbols. They no longer accept its goals, and, most significantly, they refuse almost intuitively to live by its institutional and social codes.

This growing refusal runs very deep. It extends from an opposition to war into a hatred of political manipulation in all its forms. Starting from a rejection of racism, it brings into question the very existence of hierarchical power as such. In its detestation of middle-class values and lifestyles it rapidly evolves into a rejection of the commodity system; from an irritation with environmental pollution, it passes into a rejection of the American city and modern urbanism. In short, it tends to transcend every

particularistic critique of the society and to evolve into a generalized opposition to the bourgeois order on an ever broadening scale.

In this respect, the period in which we live closely resembles the revolutionary Enlightenment that swept through France in the eighteenth century—a period that completely reworked French consciousness and prepared the conditions for the Great Revolution of 1789. Then as now, the old institutions were slowly pulverized by molecular action from below long before they were toppled by mass revolutionary action. This molecular movement creates an atmosphere of general lawlessness: a growing personal day-to-day disobedience, a tendency not to "go along" with the existing system, a seemingly "petty" but nevertheless critical attempt to circumvent restriction in every facet of daily life. The society, in effect, becomes disorderly, undisciplined, Dionysian—a condition that reveals itself most dramatically in an increasing rate of official crimes. A vast critique of the system develops—the actual Enlightenment itself, two centuries ago, and the sweeping critique that exists today—which seeps downward and accelerates the molecular movement at the base. Be it an angry gesture, a "riot" or a conscious change in lifestyle, an ever-increasing number of people—who have no more of a commitment to an organized revolutionary movement than they have to society itself—begin spontaneously to engage in their own defiant propaganda of the deed.

In its concrete details, the disintegrating social process is nourished by many sources. The process develops with all the unevenness, indeed with all the contradictions, that mark every revolutionary trend. In eighteenth century France, radical ideology oscillated between a rigid scientism and a sloppy romanticism. Notions of freedom were anchored in a precise, logical ideal of self-control, and also

a vague, instinctive norm of spontaneity. Rousseau stood at odds with d'Holbach, Diderot at odds with Voltaire, yet in retrospect we can see that one not only transcended but also presupposed the other in a *cumulative* development toward revolution.

The same uneven, contradictory and cumulative development exists today, and in many cases it follows a remarkably direct course. The "beat" movement created the most important breach in the solid, middle-class values of the 1950s, a breach that was widened enormously by the illegalities of pacifists, civil-rights workers, draft resisters and longhairs. Moreover, the merely reactive response of rebellious American youth has produced invaluable forms of libertarian and Utopian affirmation—the right to make love without restriction, the goal of community, the disavowal of money and commodities, the belief in mutual aid, and a new respect for spontaneity. Easy as it is for revolutionaries to criticize certain pitfalls within this orientation of personal and social values, the fact remains that it has played a preparatory role of decisive importance in forming the present atmosphere of indiscipline, spontaneity, radicalism and freedom.

A second parallel between the revolutionary Enlightenment and our own period is the emergence of the crowd, the so-called "mob," as a major vehicle of social protest. The typical institutionalized forms of public dissatisfaction—in our own day, they are orderly elections, demonstration and mass meetings—tend to give way to direct action by crowds. This shift from predictable, highly organized protests within the institutionalized framework of the existing society to sporadic, spontaneous, near-insurrectionary assaults from outside (and even against) socially acceptable forms reflects a profound change in popular psychology. The "rioter" has begun to break, however partially and intuitively, with those deep-seated norms of behavior which traditionally weld the "masses"

to the established order. He actively sheds the internalized structure of authority, the long-cultivated body of conditioned reflexes, and the pattern of submission sustained by guilt that tie one to the system even more effectively than any fear of police violence and juridical reprisal. Contrary to the views of social psychologists, who see in these modes of direct action the submission of the individual to a terrifying collective entity called the "mob," the truth is that "riots" and crowd actions represent the first gropings of the mass toward individuation. The mass tends to become demassified in the sense that it begins to assert itself against the really massifying automatic responses produced by the bourgeois family, the school and the mass media. By the same token, crowd actions involve the rediscovery of the streets and the effort to liberate them. Ultimately, it is in the streets that power must be dissolved: for the streets, where daily life is endured, suffered and eroded, and where power is confronted and fought, must be turned into the domain where daily life is enjoyed, created and nourished. The rebellious crowd marked the beginning not only of a spontaneous transmutation of private into social revolt, but also of a return from the abstractions of social revolt to the issues of everyday life.

Finally, as in the Enlightenment, we are seeing the emergence of an immense and ever-growing stratum of *declasses*, a body of lumpenized individuals drawn from every stratum of society. The chronically indebted and socially insecure middle classes of our period compare loosely with the chronically insolvent and flighty nobility of prerevolutionary France. A vast flotsam of educated people emerged then as now, living at loose ends, without fixed careers or established social roots. At the bottom of both structures we find a large number of chronic poor-vagabonds, drifters, people with part-time jobs or no jobs at all, threatening, unruly *sans-culottes*—surviving on public aid and on the garbage thrown off by society, the poor

of the Parisian slums, the blacks of the American ghettos.

But here all the parallels end. The French Enlightenment belongs to a period of revolutionary transition from feudalism to capitalism—both societies based on economic scarcity, class rule, exploitation, social hierarchy and state power. The day-to-day popular resistance which marked the eighteenth century and culminated in open revolution was soon disciplined by the newly emerging industrial order—as well as by naked force. The vast mass of *declasses* and *sans-culottes* was largely absorbed into the factory system and tamed by industrial discipline. Formerly rootless intellectuals and footloose nobles found secure places in the economic, political, social and cultural hierarchy of the new bourgeois order. From a socially and culturally fluid condition, highly generalized in its structure and relations, society hardened again into rigid, particularized class and institutional forms—the classical Victorian era appeared not only in England but, to one degree or another, in all of Western Europe and America. Critique was consolidated into apologia, revolt into reform, *declasses* into clearly defined classes and "mobs" into political constituencies. "Riots" became the well-behaved processions we call "demonstrations," and spontaneous direct action turned into electoral rituals.

Our own era is also a transitional one, but with a profound and new difference. In the last of their great insurrections, the *sans-culottes* of the French Revolution rose under the fiery cry: "Bread and the Constitution of '93!" The black *sans-culottes* of the American ghettos rise under the slogan: "Black is beautiful!" Between these two slogans lies a development of unprecedented importance. The *declasses* of the eighteenth century were formed during a slow transition from an agricultural to an industrial era; they were created out of a pause in the historical transition from one regime of toil to another. The demand for bread could have been heard at any time in the evolu-

tion of propertied society. The new *declasses* of the twentieth century are being created as a result of the bankruptcy of all social forms based on toil. They are the end products of the process of propertied society itself and of the social problems of material survival. In the era when technological advances and cybernation have brought into question the exploitation of man by man, toil, and material want in any form whatever, the cry "Black is beautiful" or "Make love, not war" marks the transformation of the traditional demand for survival into a historically new demand for life.\* What underpins every social conflict in the United States today is the demand for the realization of all human potentialities in a fully rounded, balanced, totalistic way of life. In short, the potentialities for revolution in America are now anchored in the potentialities of man himself.

What we are witnessing is the breakdown of a century and a half of embourgeoisement and a pulverization of all bourgeois institutions *at a point in history when the boldest concepts of Utopia are realizable*. And there is nothing that the present bourgeois order can substitute for the destruction of its traditional institutions but bureaucratic manipulation and state capitalism. This process is unfolding most dramatically in the United States. Within a period of little more than two decades, we have seen the collapse of the "American Dream," or what amounts to the same thing, the steady destruction in the United States of the

\* The above lines were written in 1966. Since then, we have seen the graffiti on the walls of Paris, during the May-June revolution: "All power to the imagination"; "I take my desires to be reality, because I believe in the reality of my desires"; "Never work"; "The more I make love, the more I want to make revolution"; "Life without dead times"; "The more you consume, the less you live"; "Culture is the inversion of life"; "One does not buy happiness, one steals it"; "Society is a carnivorous flower." These are not graffiti, they are a program for life and desire.

myth that material abundance, based on commodity relations between men, can conceal the inherent poverty of bourgeois life. Whether this process will culminate in revolution or in annihilation will depend in great part on the ability of revolutionists to extend social consciousness and defend the spontaneity of the revolutionary development from authoritarian ideologies, both of the "left" and of the right.

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# Ecology and Revolutionary Thought

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In almost every period since the Renaissance the development of revolutionary thought has been heavily influenced by a branch of science, often in conjunction with a school of philosophy.

Astronomy in the time of Copernicus and Galileo helped to change a sweeping movement of ideas from the medieval world, riddled by superstition, into one pervaded by a critical rationalism and openly naturalistic and humanistic in outlook. During the Enlightenment—the era that culminated in the French Revolution—this liberatory movement of ideas was reinforced by advances in mechanics and mathematics. The Victorian era was shaken to its very foundations by evolutionary theories in biology and anthropology, by Marx's contributions to political economy, and by Freudian psychology.

In our own time, we have seen the assimilation of these once-liberatory sciences by the established social order. Indeed, we have begun to regard science itself as an instrument of control over the thought processes and physical being of man. This distrust of science and of the scientific method is not without justification. "Many sensitive people, especially artists," observes Abraham Maslow, "are afraid that science besmirches and depresses, that it tears things apart rather than integrating them, thereby killing rather than creating."<sup>7</sup> What is perhaps equally important, modern science has lost its critical edge. Largely functional or instrumental in intent, the branches of science that once tore at the chains of man are now used to perpetuate and gild them. Even philosophy has yielded to instrumentalism and tends to be little more than a body of logical contrivances; it is the handmaiden

of the computer rather than of the revolutionary.

There is one science, however, that may yet restore and even transcend the liberatory estate of the traditional sciences and philosophies. It passes rather loosely under the name "ecology"—a term coined by Haeckel a century ago to denote "the investigation of the total relations of the animal both to its inorganic and to its organic environment."<sup>8</sup> At first glance, Haeckel's definition is innocuous enough; and ecology narrowly conceived of as one of the biological sciences, is often reduced to a variety of biometrics in which field workers focus on food chains and statistical studies of animal populations. There is an ecology of health that would hardly offend the sensibilities of the American Medical Association and a concept of social ecology that would conform to the most well-engineered notions of the New York City Planning Commission.

Broadly conceived of, however, ecology deals with the balance of nature. Inasmuch as nature includes man, the science basically deals with the harmonization of nature and man. The explosive implications of an ecological approach arise not only because ecology is intrinsically a critical science—critical on a scale that the most radical systems of political economy have failed to attain—but also because it is an integrative and reconstructive science. This integrative, reconstructive aspect of ecology, carried through to all its implications, leads directly into anarchic areas of social thought. For, in the final analysis, it is impossible to achieve a harmonization of man and nature without creating a human community that lives in a lasting balance with its natural environment.

#### THE CRITICAL NATURE OF ECOLOGY

The critical edge of ecology, a unique feature of the science in a period of general scientific docility, derives

from its subject matter—from its very domain. The issues with which ecology deals are imperishable in the sense that they cannot be ignored without bringing into question the survival of man and the survival of the planet itself. The critical edge of ecology is due not so much to the power of human reason—a power which science hallowed during its most revolutionary periods—but to a still higher power, the sovereignty of nature. It may be that man is manipulable, as the owners of the mass media argue, or that elements of nature are manipulable, as the engineers demonstrate, but ecology clearly shows that the *totality* of the natural world—nature viewed in all its aspects, cycles and interrelationships—cancels out all human pretensions to mastery over the planet. The great wastelands of the Mediterranean basin, once areas of a thriving agriculture or a rich natural flora, are historic evidence of nature's revenge against human parasitism.

No historic examples compare in weight and scope with the effects of man's despoliation—and nature's revenge—since the days of the Industrial Revolution, and especially since the end of the Second World War. Ancient examples of human parasitism were essentially local in scope; they were precisely *examples* of man's potential for destruction, and nothing more. Often, they were compensated by remarkable improvements in the natural ecology of a region, such as the European peasantry's superb reworking of the soil during centuries of cultivation and the achievements of Inca agriculturists in terracing the Andes Mountains during the pre-Columbian times.

Modern man's despoliation of the environment is global in scope, like his imperialisms. It is even extraterrestrial, as witness the disturbances of the Van Allen Belt a few years ago. Today human parasitism disrupts more than the atmosphere, climate, water resources, soil, flora and fauna of a region: it upsets virtually all the basic cycles of nature

and threatens to undermine the stability of the environment on a worldwide scale.

As an example of the scope of modern man's disruptive role, it has been estimated that the burning of fossil fuels (coal and oil) adds 600 million tons of carbon dioxide to the air annually, about .03 percent of the total atmospheric mass—this, I may add, aside from an incalculable quantity of toxicants. Since the Industrial Revolution, the overall atmospheric mass of carbon dioxide has increased by 25 percent over earlier, more stable, levels. It can be argued on very sound theoretical grounds that this growing blanket of carbon dioxide, by intercepting heat radiated from the earth, will lead to more destructive storm patterns and eventually to melting of the polar ice caps, rising sea levels, and the inundation of vast land areas. Far removed as such a deluge may be, the changing proportion of carbon dioxide to other atmospheric gases is a warning about the impact man is having on the balance of nature.

A more immediate ecological issue is man's extensive pollution of the earth's waterways. What counts here is not the fact that man befouls a given stream, river or lake—a thing he has done for ages—but rather the magnitude water pollution has reached in the past two generations. Nearly all the surface waters of the United States are now polluted. Many American waterways are open cesspools that properly qualify as extensions of urban sewage systems. It is a euphemism to describe them as rivers or lakes. More significantly, large amounts of ground water are sufficiently polluted to be undrinkable, and a number of local hepatitis epidemics have been traced to polluted wells in suburban areas. In contrast to surface-water pollution, the pollution of ground or subsurface water is immensely difficult to eliminate and tends to linger on for decades after the sources of pollution have been removed.

An article in a mass-circulation magazine appropriately describes the polluted waterways of the United States as

"Our Dying Waters." This despairing, apocalyptic description of the water pollution problem in the United States really applies to the world at large. The waters of the earth are literally dying. Massive pollution is destroying the rivers and lakes of Africa, Asia and Latin America, as well as the long-abused waterways of highly industrialized continents, as media of life. (I speak here not only of radioactive pollutants from nuclear bomb tests and power reactors, which apparently reach all the flora and fauna of the sea; the oil spills and the discharge of diesel oil have also become massive pollution problems, claiming marine life in enormous quantities every year.)

Accounts of this kind can be repeated for virtually every part of the biosphere. Pages could be written on the immense losses of productive soil that occur annually in almost every continent of the earth; on lethal air pollution episodes in major urban areas; on the worldwide distribution of toxic agents, such as radioactive isotopes and lead; on the chemicalization of man's immediate environment—one might say his very dinner table—with pesticide residues and food additives. Pieced together like bits of a jigsaw puzzle, these affronts to the environment form a pattern of destruction that has no precedent in man's long history on earth.

Obviously, man could be described as a highly destructive parasite who threatens to destroy his host—the natural world—and eventually himself. In ecology, however, the word "parasite" is not an answer to a question, but raises a question itself. Ecologists know that a destructive parasitism of this kind usually reflects the disruption of an ecological situation; indeed, many species that seem highly destructive under one set of conditions are eminently useful under another set of conditions. What imparts a profoundly critical function to ecology is the question raised by man's destructive abilities: What is the disruption that has turned man into a destructive parasite? What produces

a form of parasitism that results not only in vast natural imbalances but also threatens the existence of humanity itself?

Man has produced imbalances not only in nature, but, more fundamentally, in his relations with his fellow man and in the very structure of his society. The imbalances man has produced in the natural world are caused by the imbalances he has produced in the social world. A century ago it would have been possible to regard air pollution and water contamination as the result of the self-seeking activities of industrial barons and bureaucrats. Today, this moral explanation would be a gross oversimplification. It is doubtless true that most bourgeois enterprises are still guided by a public-be-damned attitude, as witness the reactions of power utilities, automobile concerns and steel corporations to pollution problems. But a more serious problem than the attitude of the owners is the size of the firms themselves—their enormous proportions, their location in a particular region, their density with respect to a community or waterway, their requirements for raw materials and water, and their role in the national division of labor.

What we are seeing today is a crisis in social ecology. Modern society, especially as we know it in the United States and Europe, is being organized around immense urban belts, a highly industrialized agriculture and, capping both, a swollen, bureaucratized, anonymous state apparatus. If we put all moral considerations aside for the moment and examine the physical structure of this society, what must necessarily impress us is the incredible logistical problems it is obliged to solve—problems of transportation, of density, of supply (of raw materials, manufactured commodities and foodstuffs), of economic and political organization, of industrial location, and so forth. The burden this type of urbanized and centralized society places on any continental area is enormous.

## DIVERSITY AND SIMPLICITY

The problem runs even deeper. The notion that man must dominate nature emerges directly from the domination of man by man. The patriarchal family planted the seed of domination in the nuclear relations of humanity; the classical split in the ancient world between spirit and reality—indeed, between mind and labor—nourished it; the anti-naturalist bias of Christianity tended to its growth. But it was not until organic community relations, feudal or peasant in form, dissolved into market relationships that the planet itself was reduced to a resource for exploitation. This centuries-long tendency finds its most exacerbating development in modern capitalism. Owing to its inherently competitive nature, bourgeois society not only pits humans against each other, it also pits the mass of humanity against the natural world. Just as men are converted into commodities, so every aspect of nature is converted into a commodity, a resource to be manufactured and merchandised wantonly. The liberal euphemisms for the processes involved are "growth," "industrial society" and "urban blight." By whatever language they are described, the phenomena have their roots in the domination of man by man.

The phrase "consumer society" complements the description of the present social order as an "industrial society." Needs are tailored by the mass media to create a public demand for utterly useless commodities, each carefully engineered to deteriorate after a predetermined period of time. The plundering of the human spirit by the marketplace is paralleled by the plundering of the earth by capital. (The liberal identification is a metaphor that neutralizes the social thrust of the ecological crisis.)

Despite the current clamor about population growth, the strategic ratios in the ecological crisis are not the population growth rates of India but the production rates of the

United States, a country that produces more than half of the world's goods. Here, too, liberal euphemisms like "affluence" conceal the critical thrust of a blunt word like "waste." With a ninth of its industrial capacity committed to war production, the U.S. is literally trampling upon the earth and shredding ecological links that are vital to human survival. If current industrial projections prove to be accurate, the remaining thirty years of the century will witness a fivefold increase in electric power production, based mostly on nuclear fuels and coal. The colossal burden in radioactive wastes and other effluents that this increase will place on the natural ecology of the earth hardly needs description.

In shorter perspective, the problem is no less disquieting. Within the next five years, lumber production may increase an overall twenty percent; the output of paper, five percent annually; folding boxes, three percent annually; plastics (which currently form one to two percent of municipal wastes), seven percent annually. Collectively, these industries account for the most serious pollutants in the environment. The utterly senseless nature of modern industrial activity is perhaps best illustrated by the decline in returnable (and reusable) beer bottles from 54 billion bottles in 1960 to 26 billion today. Their place has been taken over by "one-way" bottles (a rise from 8 to 21 billion in the same period) and cans (an increase from 38 to 53 billion). The "one-way" bottles and the cans, of course, pose tremendous problems in solid waste disposal.

The planet, conceived of as a lump of minerals, can support these mindless increases in the output of trash. The earth, conceived of as a complex web of life, certainly cannot. The only question is whether the earth can survive its looting long enough for man to replace the current destructive social system with a humanistic, ecologically oriented society.

Ecologists are often asked, rather tauntingly, to locate

with scientific exactness the ecological breaking point of nature—the point at which the natural world will cave in on man. This is equivalent to asking a psychiatrist for the precise moment when a neurotic will become a nonfunctional psychotic. No such answer is ever likely to be available. But the ecologist can supply a strategic insight into the directions man seems to be following as a result of his split with the natural world.

From the standpoint of ecology, man is dangerously oversimplifying his environment. The modern city represents a regressive encroachment of the synthetic on the natural, of the inorganic (concrete, metals, and glass) on the organic, of crude, elemental stimuli on variegated, wide-ranging ones. The vast urban belts now developing in industrialized areas of the world are not only grossly offensive to the eye and the ear, they are chronically smog-ridden, noisy, and virtually immobilized by congestion.

The process of simplifying man's environment and rendering it increasingly elemental and crude has a cultural as well as a physical dimension. The need to manipulate immense urban populations—to transport, feed, employ, educate and somehow entertain millions of densely concentrated people—leads to a crucial decline in civic and social standards. A mass concept of human relations—totalitarian, centralistic and regimented in orientation—tends to dominate the more individuated concepts of the past. Bureaucratic techniques of social management tend to replace humanistic approaches. All that is spontaneous, creative and individuated is circumscribed by the standardized, the regulated and the massified. The space of the individual is steadily narrowed by restrictions imposed upon him by a faceless, impersonal social apparatus. Any recognition of unique personal qualities is increasingly surrendered to the manipulation of the lowest common denominator of the mass. A quantitative, statistical approach, a beehive manner of dealing with man, tends to

triumph over the precious individualized and qualitative approach which places the strongest emphasis on personal uniqueness, free expression and cultural complexity.

The same regressive simplification of the environment occurs in modern agriculture.\* The manipulated people in modern cities must be fed, and to feed them involves an extension of industrial farming. Food plants must be cultivated in a manner that allows for a high degree of mechanization—not to reduce human toil but to increase productivity and efficiency, to maximize investments, and to exploit the biosphere. Accordingly, the terrain must be reduced to a flat plain—to a factory floor, if you will—and natural variations in topography must be diminished as much as possible. Plant growth must be closely regulated to meet the tight schedules of food-processing factories. Plowing, soil fertilization, sowing and harvesting must be handled on a mass scale, often in total disregard of the natural ecology of an area. Large areas of the land must be used to cultivate a single crop—a form of plantation agriculture that not only lends itself to mechanization but also to pest infestation. A single crop is the ideal environment for the proliferation of pest species. Finally, chemical agents must be used lavishly to deal with the problems created by insects, weeds, and plant diseases, to regulate crop production, and to maximize soil exploitation. The real symbol of modern agriculture is not the sickle (or, for that matter, the tractor), but the airplane. The modern food cultivator is represented not by the peasant, the yeo-

man, or even the agronomist—men who could be expected to have an intimate relationship with the unique qualities of the land on which they grow crops—but the pilot or chemist, for whom soil is a mere resource, an inorganic raw material.

The simplification process is carried still further by an exaggerated regional (indeed, national) division of labor. Immense areas of the planet are increasingly reserved for specific industrial tasks or reduced to depots for raw materials. Others are turned into centers of urban population, largely occupied with commerce and trade. Cities and regions (in fact, countries and continents) are specifically identified with special products—Pittsburgh, Cleveland and Youngstown with steel, New York with finance, Bolivia with tin, Arabia with oil, Europe and the U.S. with industrial goods, and the rest of the world with raw materials of one kind or another. The complex ecosystems which make up the regions of a continent are submerged by an organization of entire nations into economically rationalized entities, each a way station in a vast industrial belt-system, global in its dimensions. It is only a matter of time before the most attractive areas of the countryside succumb to the concrete mixer, just as most of the Eastern seashore areas of the United States have already succumbed to subdivisions and bungalows. What will remain in the way of natural beauty will be debased by trailer lots, canvas slums, "scenic" highways, motels, food stalls and the oil slicks of motor boats.

The point is that man is undoing the work of organic evolution. By creating vast urban agglomerations of concrete, metal and glass, by overriding and undermining the complex, subtly organized ecosystems that constitute local differences in the natural world—in short, by replacing a highly complex, organic environment with a simplified, inorganic one—man is disassembling the biotic pyramid that supported humanity for countless millennia. In the course

\* For insight into this problem the reader may consult *The Ecology of Invasions* by Charles S. Elton (Wiley; New York, 1958), *Soil and Civilisation* by Edward Hyams (Thames and Hudson; London, 1952), *Our Synthetic Environment* by Murray Bookchin [pseud. Lewis Herber] (Knopf; New York, 1962), and *Silent Spring* by Rachel Carson (Houghton Mifflin; Boston, 1962). The last should be read not as a diatribe against pesticides but as a plea for ecological diversification.

of replacing the complex ecological relationships, on which all advanced living things depend, for more elementary relationships, man is steadily restoring the biosphere to a stage which will be able to support only simpler forms of life. If this great reversal of the evolutionary process continues, it is by no means fanciful to suppose that the pre-conditions for higher forms of life will be irreparably destroyed and the earth will become incapable of supporting man himself.

Ecology derives its critical edge not only from the fact that it alone, among all the sciences, presents this awesome message to humanity, but also because it presents this message in a new social dimension. From an ecological viewpoint, the reversal of organic evolution is the result of appalling contradictions between town and country, state and community, industry and husbandry, mass manufacture and craftsmanship, centralism and regionalism, the bureaucratic scale and the human scale.

#### *THE RECONSTRUCTIVE NATURE OF ECOLOGY*

Until recently, attempts to resolve the contradictions created by urbanization, centralization, bureaucratic growth and statification were viewed as a vain counterdrift to "progress"—a counterdrift that could be dismissed as chimerical and reactionary. The anarchist was regarded as a forlorn visionary, a social outcast, filled with nostalgia for the peasant village or the medieval commune. His yearnings for a decentralized society and for a humanistic community at one with nature and the needs of the individual—the spontaneous individual, unfettered by authority—were viewed as the reactions of a romantic, of a declassed craftsman or an intellectual "misfit." His protest against centralization and statification seemed all the less persuasive because it was supported primarily by ethical considerations—by Utopian, ostensibly "unrealistic," notions of what man could be, not by what he was. In re-

sponse to this protest, opponents of anarchist thought—liberalists, rightists and authoritarian "leftists"—argued that they were the voices of historic reality, that their statist and centralist notions were rooted in the objective, practical world.

Time is not very kind to the conflict of ideas. Whatever may have been the validity of libertarian and non-libertarian views a few years ago, historical development has rendered virtually all objections to anarchist thought meaningless today. The modern city and state, the massive coal-steel technology of the Industrial Revolution, the later, more rationalized, systems of mass production and assembly-line systems of labor organization, the centralized nation, the state and its bureaucratic apparatus—all have reached their limits. Whatever progressive or liberatory role they may have possessed, they have now become entirely regressive and oppressive. They are regressive not only because they erode the human spirit and drain the community of all its cohesiveness, solidarity and ethico-cultural standards; they are regressive from an objective standpoint, from an ecological standpoint. For they undermine not only the human spirit and the human community but also the viability of the planet and all living things on it.

It cannot be emphasized too strongly that the anarchist concepts of a balanced community, a face-to-face democracy, a humanistic technology and a decentralized society—these rich libertarian concepts—are not only desirable, they are also necessary. They belong not only to the great visions of man's future, they now constitute the preconditions for human survival. The process of social development has carried them out of the ethical, subjective dimension into a practical, objective dimension. What was once regarded as impractical and visionary has become eminently practical. And what was once regarded as practical and objective has become eminently impractical and irrele-

vant in terms of man's development towards a fuller, unfettered existence. If we conceive of demands for community, face-to-face democracy, a humanistic liberatory technology and decentralization merely as reactions to the prevailing state of affairs—a vigorous "nay" to the "yea" of what exists today—a compelling, objective case can now be made for the practicality of an anarchist society.

A rejection of the prevailing state of affairs accounts, I think, for the explosive growth of intuitive anarchism among young people today. Their love of nature is a reaction against the highly synthetic qualities of our urban environment and its shabby products. Their informality of dress and manners is a reaction against the formalized, standardized nature of modern institutionalized living. Their predisposition for direct action is a reaction against the bureaucratization and centralization of society. Their tendency to drop out, to avoid toil and the rat race, reflects a growing anger towards the mindless industrial routine bred by modern mass manufacture in the factory, the office or the university. Their intense individualism is, in its own elemental way, a *de facto* decentralization of social life—a personal withdrawal from mass society.

What is most significant about ecology is its ability to convert this often nihilistic rejection of the status quo into an emphatic affirmation of life—indeed, into a reconstructive credo for a humanistic society. The essence of ecology's reconstructive message can be summed up in the word "diversity." From an ecological viewpoint, balance and harmony in nature, in society and, by inference, in behavior, are achieved not by mechanical standardization but by its opposite, organic differentiation. This message can be understood clearly only by examining its practical meaning.

Let us consider the ecological principle of diversity—what Charles Elton calls the "conservation of variety"—as it applies to biology, specifically to agriculture. A number

of studies—Lotka's and Volterra's mathematical models, Bause's experiments with protozoa and mites in controlled environments, and extensive field research—clearly demonstrate that fluctuations in animal and plant populations, ranging from mild to pestlike proportions, depend heavily upon the number of species in an ecosystem and on the degree of variety in the environment. The greater the variety of prey and predators, the more stable the population; the more diversified the environment in terms of flora and fauna, the less likely there is to be ecological instability. Stability is a function of variety and diversity: if the environment is simplified and the variety of animal and plant species is reduced, fluctuations in population become marked and tend to get out of control. They tend to reach pest proportions.

In the case of pest control, many ecologists now conclude that we can avoid the repetitive use of toxic chemicals such as insecticides and herbicides by allowing for a greater interplay between living things. We must leave more room for natural spontaneity, for the diverse biological forces that make up an ecological situation. "European entomologists now speak of managing the entire plant-insect community," observes Robert L. Rudd. "It is called manipulation of the biocenose.\* The biogenetic environment is varied, complex and dynamic. Although numbers of individuals will constantly change, no one species will normally reach pest proportions. The special condi-

\* Rudd's use of the word "manipulation" is likely to create the erroneous impression that an ecological situation can be described by simple mechanical terms. Lest this impression arise, I would like to emphasize that our knowledge of an ecological situation and the practical use of this knowledge are matters of insight rather than power. Charles Elton states the case for the management of an ecological situation when he writes: "The world's future has to be managed, but this management would not be like a game of chess ... [but] more like steering a boat."

tions which allow high populations of a single species in a complex ecosystem are rare events. Management of the biocenose or ecosystem should become our goal, challenging as it is.<sup>9</sup>

The "manipulation" of the biocenose in a meaningful way, however, presupposes a far-reaching decentralization of agriculture. Wherever feasible, industrial agriculture must give way to soil and agricultural husbandry; the factory floor must yield to gardening and horticulture. I do not wish to imply that we must surrender the gains acquired by large-scale agriculture and mechanization. What I *do* contend, however, is that the land must be cultivated as though it were a garden; its flora must be diversified and carefully tended, balanced by fauna and tree shelter appropriate to the region. Decentralization is important, moreover, for the development of the agriculturist as well as for the development of agriculture. Food cultivation, practiced in a truly ecological sense, presupposes that the agriculturist is familiar with all the features and subtleties of the terrain on which the crops are grown. He must have a thorough knowledge of the physiography of the land, its variegated soils—crop land, forest land, pasture land—its mineral and organic content and its micro-climate, and he must be engaged in a continuing study of the effects produced by new flora and fauna. He must develop his sensitivity to the land's possibilities and needs while he becomes an organic part of the agricultural situation. We can hardly hope to achieve this high degree of sensitivity and integration in the food cultivator without reducing agriculture to a human scale, without bringing agriculture within the scope of the individual. To meet the demands of an ecological approach to food cultivation, agriculture must be rescaled from huge industrial farms to moderate-sized units.

The same reasoning applies to a rational development of energy resources. The Industrial Revolution increased the

*quantity* of energy used by man. Although it is certainly true that preindustrial societies relied primarily on animal power and human muscles, complex energy patterns developed in many regions of Europe, involving a subtle integration of resources such as wind and water power, and a variety of fuels (wood, peat, coal, vegetable starches and animal fats).

The Industrial Revolution overwhelmed and largely destroyed these regional energy patterns, replacing them first by a single energy system (coal) and later by a dual system (coal and petroleum). Regions disappeared as models of integrated energy patterns—indeed, the very concept of *integration through diversity* was obliterated. As I indicated earlier, many regions became predominantly mining areas, devoted to the extraction of a single resource, while others were turned into immense industrial areas, often devoted to the production of a few commodities. We need not review the role this breakdown in true regionalism has played in producing air and water pollution, the damage it has inflicted on large areas of the countryside, and the prospect we face in the depletion of our precious hydro-carbon fuels.

We can, of course, turn to nuclear fuels, but it is chilling to think of the lethal radioactive wastes that would require disposal if power reactors were our sole energy source. Eventually, an energy system based on radioactive materials would lead to the widespread contamination of the environment—at first in a subtle form, but later on a massive and palpably destructive scale. Or we could apply ecological principles to the solution of our energy problems. We could try to re-establish earlier regional energy patterns, using a combined system of energy provided by wind, water and solar power. We would be aided by devices more sophisticated than any known in the past.

Solar devices, wind turbines and hydro-electric resources, taken singly, do not provide a solution for our

energy problems and the ecological disruption created by conventional fuels. Pieced together as a mosaic, as an organic energy pattern developed from the potentialities of a region, they could amply meet the needs of a decentralized society. In sunny latitudes, we could rely more heavily on solar energy than on combustible fuels. In areas marked by atmospheric turbulence, we could rely more heavily on wind devices; and in suitable coastal areas or inland regions with a good network of rivers, the greater part of our energy would come from hydro-electric installations. In all cases, we would use a *mosaic* of non-combustible, combustible, and nuclear fuels. The point I wish to make is that by diversifying our use of energy resources, by organizing them into an ecologically balanced pattern, we could combine wind, solar and water power in a given region to meet the industrial and domestic needs of a given community with only a minimal use of harmful fuels. And, eventually, we might sophisticate our non-combustion energy devices to a point where all harmful sources of energy could be eliminated.

As in the case of agriculture, however, the application of ecological principles to energy resources presupposes a far-reaching decentralization of society and a truly regional concept of social organization. To maintain a large city requires immense quantities of coal and petroleum. By contrast, solar, wind and tidal energy reach us mainly in small packets; except for spectacular tidal dams, the new devices seldom provide more than a few thousand kilowatt-hours of electricity. It is difficult to believe that we will ever be able to design solar collectors that can furnish us with the immense blocks of electric power produced by a giant steam plant; it is equally difficult to conceive of a battery of wind turbines that will provide us with enough electricity to illuminate Manhattan Island. If homes and factories are heavily concentrated, devices for using clean sources of energy will probably remain mere playthings;

but if urban communities are reduced in size and widely dispersed over the land, there is no reason why these devices cannot be combined to provide us with all the amenities of an industrialized civilization. To use solar, wind and tidal power effectively, the megalopolis must be decentralized. A new type of community, carefully tailored to the characteristics and resources of a region, must replace the sprawling urban belts that are emerging today.

To be sure, an objective case for decentralization does not end with a discussion of agriculture and the problems created by combustible energy resources. The validity of the decentralist case can be demonstrated for nearly all the "logistical" problems of our time. Let me cite an example from the problematical area of transportation. A great deal has been written about the harmful effects of gasoline-driven motor vehicles—their wastefulness, their role in urban air pollution, the noise they contribute to the city environment, the enormous death toll they claim annually in the large cities of the world and on highways. In a highly urbanized civilization it would be useless to replace these noxious vehicles by clean, efficient, virtually noiseless, and certainly safer, battery-powered vehicles. The best of our electric cars must be recharged about every hundred miles—a feature which limits their usefulness for transportation in large cities. In a small, decentralized community, however, it would be feasible to use these electric vehicles for urban or regional transportation and establish monorail networks for long-distance transportation.

It is fairly well known that gasoline-powered vehicles contribute enormously to urban air pollution, and there is a strong sentiment to "engineer" the more noxious features of the automobile into oblivion. Our age characteristically tries to solve all its irrationalities with a gimmick—afterburners for toxic gasoline fumes, antibiotics for ill health, tranquilizers for psychic disturbances. But the problem of urban air pollution is too intractable for gim-

micks; perhaps it is more intractable than we care to believe. Basically, air pollution is caused by high population densities—by an excessive concentration of people in a small area. Millions of people, densely concentrated in a large city, necessarily produce serious *local* air pollution merely by their day-to-day activities. They must burn fuels for domestic and industrial reasons; they must construct or tear down buildings (the aerial debris produced by these activities is a major source of urban air pollution); they must dispose of immense quantities of rubbish; they must travel on roads with rubber tires (the particles produced by the erosion of tires and roadway materials add significantly to air pollution). Whatever pollution-control devices we add to automobiles and power plants, the improvements these devices will produce in the quality of urban air will be more than canceled out by future megalopolitan growth.

There is more to anarchism than decentralized communities. If I have examined this possibility in some detail, it has been to demonstrate that an anarchist society, far from being a remote ideal, has become a precondition for the practice of ecological principles. To sum up the critical message of ecology: if we diminish variety in the natural world, we debase its unity and wholeness; we destroy the forces making for natural harmony and for a lasting equilibrium; and, what is even more significant, we introduce an absolute retrogression in the development of the natural world which may eventually render the environment unfit for advanced forms of life. To sum up the reconstructive message of ecology: if we wish to advance the unity and stability of the natural world, if we wish to harmonize it, we must conserve and promote variety. To be sure, mere variety for its own sake is a vacuous goal. In nature, variety emerges spontaneously. The capacities of a new species are tested by the rigors of climate, by its ability to deal with predators and by its capacity to establish and enlarge its

niche. *Yet the species that succeeds in enlarging its niche in the environment also enlarges the ecological situation as a whole.* To borrow E. A. Gutkind's phrase, it "expands the environment,"<sup>10</sup> both for itself and for the species with which it enters into a balanced relationship.

How do these concepts apply to social theory? To many readers, I suppose, it should suffice to say that, inasmuch as man is part of nature, an expanding natural environment enlarges the basis for social development. But the answer to the question goes much deeper than many ecologists and libertarians suspect. Again, allow me to return to the ecological principle of wholeness and balance as a product of diversity. Keeping this principle in mind, the first step towards an answer is provided by a passage in Herbert Read's "The Philosophy of Anarchism." In presenting his "measure of progress," Read observes: "Progress is measured by the degree of differentiation within a society. If the individual is a unit in a corporate mass, his life will be limited, dull, and mechanical. If the individual is a unit on his own, with space and potentiality for separate action, then he may be more subject to accident or chance, but at least he can expand and express himself. He can develop—develop in the only real meaning of the word—develop in consciousness of strength, vitality, and joy."

Read's thought, unfortunately, is not fully developed, but it provides an interesting point of departure. What first strikes us is that both the ecologist and the anarchist place a strong emphasis on spontaneity. The ecologist, insofar as he is more than a technician, tends to reject the notion of "power over nature." He speaks, instead, of "steering" his way through an ecological situation, of *managing* rather than *recreating* an ecosystem. The anarchist, in turn, speaks in terms of social spontaneity, of releasing the potentialities of society and humanity, of giving free and unfettered rein to the creativity of people. Both, in their own way, regard authority as inhibitory, as a weight limit-

ing the creative potential of a natural and social situation. Their object is not to *rule* a domain, but to *release* it. They regard insight, reason and knowledge as means for fulfilling the potentialities of a situation, as facilitating the working out of the logic of a situation, not as replacing its potentialities with preconceived notions or distorting their development with dogmas.

Turning to Read's words, what strikes us is that both the ecologist and the anarchist view differentiation as a measure of progress. The ecologist uses the term "biotic pyramid" in speaking of biological advances; the anarchist, the word "individuation" to denote social advances. If we go beyond Read we will observe that, to both the ecologist and the anarchist, an ever-increasing unity is achieved by growing differentiation. *An expanding whole is created by the diversification and enrichment of its parts.*

Just as the ecologist seeks to expand the range of an ecosystem and promote a free interplay between species, so the anarchist seeks to expand the range of social experience and remove all fetters to its development. Anarchism is not only a stateless society but also a harmonized society which exposes man to the stimuli provided by both agrarian and urban life, to physical activity and mental activity, to unrepressed sensuality and self-directed spirituality, to communal solidarity and individual development, to regional uniqueness and worldwide brotherhood, to spontaneity and self-discipline, to the elimination of toil and the promotion of craftsmanship. In our schizoid society, these goals are regarded as mutually exclusive, indeed as sharply opposed. They appear as dualities because of the very logistics of present-day society—the separation of town and country, the specialization of labor, the atomization of man—and it would be preposterous to believe that these dualities could be resolved without a general idea of the *physical* structure of an anarchist society. We can gain some idea of what such a society would be like by reading

William Morris's *News From Nowhere* and the writings of Peter Kropotkin. But these works provide us with mere glimpses. They do not take into account the post-World War II developments of technology and the contributions made by the development of ecology. This is not the place to embark on "utopian writing," but certain guidelines can be presented even in a general discussion. And in presenting these guidelines, I am eager to emphasize not only the more obvious ecological premises that support them, but also the humanistic ones.

An anarchist society should be a decentralized society, not only to establish a lasting basis for the harmonization of man and nature, *but also to add new dimensions to the harmonization of man and man.* The Greeks, we are often reminded, would have been horrified by a city whose size and population precluded a face-to-face, often familiar, relationship between citizens. There is plainly a need to reduce the dimensions of the human community—partly to solve our pollution and transportation problems, partly also to create *real* communities. In a sense, we must *humanize* humanity. Electronic devices such as telephones, telegraphs, radios and television receivers should be used as little as possible to mediate the relations between people. In making collective decisions—the ancient Athenian ecclesia was, in some ways, a model for making social decisions—all members of the community should have an opportunity to acquire in full the measure of anyone who addresses the assembly. They should be in a position to absorb his attitudes, study his expressions, and weigh his motives as well as his ideas in a direct personal encounter and through face-to-face discussion.

Our small communities should be economically balanced and well rounded, partly so that they can make full use of local raw materials and energy resources, partly also to enlarge the agricultural and industrial stimuli to which individuals are exposed. The member of a community who

has a predilection for engineering, for instance, should be encouraged to steep his hands in humus; the man of ideas should be encouraged to employ his musculature; the "in-born" farmer should gain a familiarity with the workings of a rolling mill. To separate the engineer from the soil, the thinker from the spade, and the farmer from the industrial plant promotes a degree of vocational overspecialization that leads to a dangerous measure of social control by specialists. What is equally important, professional and vocational specialization prevents society from achieving a vital goal: the humanization of nature by the technician and the naturalization of society by the biologist.

I submit that an anarchist community would approximate a clearly definable ecosystem; it would be diversified, balanced and harmonious. It is arguable whether such an ecosystem would acquire the configuration of an urban entity with a distinct center, such as we find in the Greek *polis* or the medieval commune, or whether, as Gutkind proposes, society would consist of widely dispersed communities without a distinct center. In any case, the ecological scale for any of these communities would be determined by the smallest ecosystem capable of supporting a population of moderate size.

A relatively self-sufficient community, visibly dependent on its environment for the means of life, would gain a new respect for the organic interrelationships that sustain it. In the long run, the attempt to approximate self-sufficiency would, I think, prove more efficient than the exaggerated national division of labor that prevails today. Although there would doubtless be many duplications of small industrial facilities from community to community, the familiarity of each group with its local environment and its ecological roots would make for a more intelligent and more loving use of its environment. I submit that, far from producing provincialism, relative self-sufficiency would create a new matrix for individual and communal

development—a oneness with the surroundings that would vitalize the community.

The rotation of civic, vocational and professional responsibilities would stimulate the senses in the being of the individual, creating and rounding out new dimensions in self-development. In a complete society we could hope to create complete men; in a rounded society, rounded men. In the Western world, the Athenians, for all their shortcomings and limitations, were the first to give us a notion of this completeness. "The *polis* was made for the amateur," H. D. F. Kitto tells us. "Its ideal was that every citizen (more or less, according as the *polis* was democratic or oligarchic) should play his part in all of its many activities—an ideal that is recognizably descended from the generous Homeric conception of *arete* as an all-round excellence and an all-round activity. It implies a respect for the wholeness or the oneness of life, and a consequent dislike of specialization. It implies a contempt for efficiency—or rather a much higher ideal of efficiency; and efficiency which exists not in one department of life, but in life itself."<sup>11</sup> An anarchist society, although it would surely aspire to more, could hardly hope to achieve less than this state of mind.

If the ecological community is ever achieved in practice, social life will yield a sensitive development of human and natural diversity, falling together into a well balanced, harmonious whole. Ranging from community through region to entire continents, we will see a colorful differentiation of human groups and ecosystems, each developing its unique potentialities and exposing members of the community to a wide spectrum of economic, cultural and behavioral stimuli. Falling within our purview will be an exciting, often dramatic, variety of communal forms—here marked by architectural and industrial adaptations to semi-arid ecosystems, there to grasslands, elsewhere by adaptation to forested areas. We will witness a creative

interplay between individual and group, community and environment, humanity and nature. The cast of mind that today organizes differences among humans and other life-forms along hierarchical lines, defining the external in terms of its "superiority" or "inferiority," will give way to an outlook that deals with diversity in an ecological manner. Differences among people will be respected, indeed fostered, as elements that enrich the unity of experience and phenomena. The traditional relationship which pits subject against object will be altered qualitatively; the "external," the "different," the "other" will be conceived of as individual parts of a whole all the richer because of its complexity. This sense of unity will reflect the harmonization of interests between individuals and between society and nature. Freed from an oppressive routine, from paralyzing repressions and insecurities, from the burdens of toil and false needs, from the trammels of authority and irrational compulsion, individuals will finally, for the first time in history, be in a position to realize their potentialities as members of the human community and the natural world.

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## Towards a Liberatory Technology

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Not since the days of the Industrial Revolution have popular attitudes toward technology fluctuated as sharply as in the past few decades. During most of the twenties, and even well into the thirties, public opinion generally welcomed technological innovation and identified man's welfare with the industrial advances of the time. This was a period when Soviet apologists could justify Stalin's most brutal methods and worst crimes merely by describing him as the "industrializer" of modern Russia. It was also a period when the most effective critique of capitalist society could rest on the brute facts of economic and technological stagnation in the United States and Western Europe. To many people there seemed to be a direct, one-to-one relationship between technological advances and social progress; a fetishism of the word "industrialization" excused the most abusive of economic plans and programs.

Today, we would regard these attitudes as naive. Except perhaps for the technicians and scientists who design the "hardware," the feeling of most people toward technological innovation could be described as schizoid, divided into a gnawing fear of nuclear extinction on the one hand, and a yearning for material abundance, leisure and security on the other. Technology, too, seems to be at odds with itself. The bomb is pitted against the power reactor, the intercontinental missile against the communications satellite. The same technological discipline tends to appear both as a foe and a friend of humanity, and even traditionally human-oriented sciences, such as medicine, occupy an ambivalent position—as witness the promise of advances in chemotherapy and the threat created by research in biological warfare.

It is not surprising to find that the tension between

promise and threat is increasingly being resolved in favor of threat by a blanket rejection of technology. To an ever-growing extent, technology is viewed as a demon, imbued with a sinister life of its own, that is likely to mechanize man if it fails to exterminate him. The deep pessimism this view produces is often as simplistic as the optimism that prevailed in earlier decades. There is a very real danger that we will lose our perspective toward technology, that we will neglect its liberatory tendencies, and, worse, submit fatalistically to its use for destructive ends. If we are not to be paralyzed by this new form of social fatalism, a balance must be struck.

The purpose of this article is to explore three questions. What is the liberatory potential of modern technology, both materially and spiritually? What tendencies, if any, are reshaping the machine for use in an organic, human-oriented society? And finally, how can the new technology and resources be used in an ecological manner—that is, to promote the balance of nature, the full development of natural regions, and the creation of organic, humanistic communities?

The emphasis in the above remarks should be placed on the word "potential." I make no claim that technology is necessarily liberatory or consistently beneficial to man's development. But I surely do not believe that man is destined to be enslaved by technology and technological modes of thought (as Juenger and Elul imply in their books on the subject\*). On the contrary, I shall try to

\* Both Juenger and Elul believe that the debasement of man by the machine is intrinsic to the development of technology, and their works conclude on a grim note of resignation. This viewpoint reflects the social fatalism I have in mind—especially as expressed by Elul, whose ideas are more symptomatic of the contemporary human condition. See Friedrich George Juenger, *The Failure of Technology* (Regnery; Chicago, 1956) and Jacques Elul, *The Technological Society* (Knopf; New York, 1968).

show that an organic mode of life deprived of its technological component would be as nonfunctional as a man deprived of his skeleton. Technology must be viewed as the basic structural support of a society; it is literally the framework of an economy and of many social institutions.

### TECHNOLOGY AND FREEDOM

The year 1848 stands out as a turning point in the history of modern revolutions. This was the year when Marxism made its debut as a distinct ideology in the pages of the *Communist Manifesto*, and when the proletariat, represented by the Parisian workers, made its debut as a distinct political force on the barricades of June. It could also be said that 1848, a year close to the halfway mark of the nineteenth century, represents the culmination of the traditional steam-powered technology initiated by the Newcomen engine a century and a half earlier.

What strikes us about the convergence of these ideological, political and technological milestones is the extent to which the *Communist Manifesto* and the June barricades were in advance of their time. In the 1840s, the Industrial Revolution centered around three areas of the economy: textile production, iron-making and transportation. The invention of Arkwright's spinning machine, Watt's steam engine and Cartwright's power loom had finally brought the factory system to the textile industry; meanwhile, a number of striking innovations in iron-making technology assured the supply of high-quality, inexpensive metals needed to sustain factory and railway expansion. But these innovations, important as they were, were not accompanied by commensurate changes in other areas of industrial technology. For one thing, few steam engines were rated at more than fifteen horsepower, and the best blast furnaces provided little more than a hundred tons of iron a week—a fraction of the thousands of tons produced daily by modern furnaces. More important, the remaining areas

of the economy were not yet significantly affected by technological innovation. Mining techniques, for example, had changed little since the days of the Renaissance. The miner still worked the ore face with a hand pick and a crowbar, and drainage pumps, ventilation systems and hauling techniques were not greatly improved over the descriptions we find in Agricola's classic on mining written three centuries earlier. Agriculture was only emerging from its centuries-old sleep. Although a great deal of land had been cleared for food cultivation, soil studies were still a novelty. So heavy, in fact, was the weight of tradition and conservatism that most harvesting was still done by hand, despite the fact that a mechanical reaper had been perfected as early as 1822. Buildings, despite their massiveness and ornateness, were erected primarily by sheer muscle power; the hand crane and windlass still occupied the mechanical center of the construction site. Steel was a relatively rare metal: as late as 1850 it was priced at \$250 a ton and, until the discovery of the Bessemer converter, steel-making techniques had stagnated for centuries. Finally, although precision tools had made great forward strides, it is worth noting that Charles Babbage's efforts to build a sophisticated mechanical computer were thwarted by the inadequate machining techniques of the time.

I have reviewed these technological developments because both their promise and their limitations exercised a profound influence on nineteenth century revolutionary thought. The innovations in textile and iron-making technology provided a new sense of promise, indeed a new stimulus, to socialist and Utopian thought. It seemed to the revolutionary theorist that for the first time in history he could anchor his dream of a liberatory society in the visible prospect of material abundance and increased leisure for the mass of humanity. Socialism, the theorists argued, could be based on self-interest rather than on man's dubious nobility of mind and spirit. Technological

innovation had transmuted the socialist ideal from a vague humanitarian hope into a practical program.

The newly acquired practicality compelled many socialist theorists, particularly Marx and Engels, to grapple with the technological limitations of their time. They were faced with a strategic issue: in all previous revolutions, technology had not yet developed to a level where men could be freed from material want, toil and the struggle over the necessities of life. However glowing and lofty were the revolutionary ideals of the past, the vast majority of the people, burdened by material want, had to leave the stage of history after the revolution, return to work, and deliver the management of society to a new leisured class of exploiters. Indeed, any attempt to equalize the wealth of society at a low level of technological development would not have eliminated want, but would have merely made it into a general feature of society as a whole, thereby recreating all the conditions for a new struggle over the material things of life, for new forms of property, and eventually for a new system of class domination. A development of the productive forces is the "absolutely necessary practical premise [of communism]," wrote Marx and Engels in 1846, "because without it *want* is generalized, and with want the struggle for necessities and all the old filthy business would necessarily be reproduced."<sup>12</sup>

Virtually all the Utopias, theories and revolutionary programs of the early nineteenth century were faced with problems of necessity—of how to allocate labor and material goods at a relatively low level of technological development. These problems permeated revolutionary thought in a way comparable only to the impact of original sin on Christian theology. The fact that men would have to devote a substantial portion of their time to toil, for which they would get scant returns, formed a major premise of all socialist ideology—authoritarian and libertarian, Utopian and scientific, Marxist and anarchist. Implicit in the Marx-

ist notion of a planned economy was the fact, incontestably clear in Marx's day, that socialism would still be burdened by relatively scarce resources. Men would have to plan—in effect, to restrict—the distribution of goods and would have to rationalize—in effect, to intensify—the use of labor. Toil, under socialism, would be a duty, a responsibility which every able-bodied individual would have to undertake. Even Proudhon advanced this dour view when he wrote: "Yes, life is a struggle. But this struggle is not between man and man—it is between man and Nature; and it is each one's duty to share it."<sup>13</sup> This austere, almost biblical, emphasis on struggle and duty reflects the harsh quality of socialist thought during the Industrial Revolution.

The problem of dealing with want and work—an age-old problem perpetuated by the early Industrial Revolution-produced the great divergence in revolutionary ideas between socialism and anarchism. Freedom would still be circumscribed by necessity in the event of a revolution. How was this world of necessity to be "administered"? How could the allocation of goods and duties be decided? Marx left this decision to a state power, a transitional "proletarian" state power, to be sure, but nevertheless a coercive body, established above society. According to Marx, the state would "wither away" as technology developed and enlarged the domain of freedom, granting humanity material plenty and the leisure to control its affairs directly. This strange calculus, in which necessity and freedom were mediated by the state, differed very little politically from the common run of bourgeois-democratic radical opinion in the last century. The anarchist hope for the abolition of the state, on the other hand, rested largely on a belief in the viability of man's social instincts. Bakunin, for example, thought custom would compel any individuals with antisocial proclivities to abide by collectivist values and needs without

obliging society to use coercion. Kropotkin, who exercised more influence among anarchists in this area of speculation, invoked man's propensity for mutual aid—essentially a social instinct—as the guarantor of solidarity in an anarchist community (a concept which he derived from his study of animal and social evolution).

The fact remains, however, that in both cases—the Marxist and the anarchist—the answer to the problem of want and work was shot through with ambiguity. The realm of necessity was brutally present; it could not be conjured away by mere theory and speculation. The Marxists could hope to administer necessity by means of a state, and the anarchists, to deal with it through free communities, but given the limited technological development of the last century, in the last analysis both schools depended on an act of faith to cope with the problem of want and work. Anarchists could argue against the Marxists that any transitional state, however revolutionary its rhetoric and democratic its structure, would be self-perpetuating; it would tend to become an end in itself and to preserve the very material and social conditions it had been created to remove. For such a state to "wither away" (that is, promote its own dissolution) would require its leaders and bureaucracy to be people of superhuman moral qualities. The Marxists, in turn, could invoke history to show that custom and mutualistic propensities were never effective barriers to the pressures of material need, or to the onslaught of property, or to the development of exploitation and class domination. Accordingly, they dismissed anarchism as an ethical doctrine which revived the mystique of the natural man and his inborn social virtues.

The problem of want and work—of the realm of necessity—was never satisfactorily resolved by either body of doctrine in the last century. It is to the lasting credit of anarchism that it uncompromisingly retained its high ideal of freedom—the ideal of spontaneous organization, com-

munity, and the abolition of all authority—although this ideal remained only a vision of man's future, of the time when technology would eliminate the realm of necessity entirely. Marxism increasingly compromised its ideal of freedom, painfully qualifying it with transitional stages and political expediencies, until today it is an ideology of naked power, pragmatic efficiency and social centralization almost indistinguishable from the ideologies of modern state capitalism.\*

In retrospect, it is astonishing to consider how long the problem of want and work cast its shadow over revolutionary theory. In a span of only nine decades—the years between 1850 and 1940—Western society created, passed through and evolved beyond two major epochs of technological history—the paleotechnic age of coal and steel, and the neotechnic age of electric power, synthetic chemicals, electricity and internal combustion engines. Ironically, both ages of technology seemed to enhance the importance of toil in society. As the number of industrial workers increased in proportion to other social classes, labor—more precisely, toil—acquired an increasingly high status in revolutionary thought. During this period, the propaganda of the socialists often sounded like a paean to toil; not only was toil "ennobling," but the workers were extolled as the only useful individuals in the social fabric. They were endowed with a supposedly superior instinctive ability that made them the arbiters of philosophy, art, and social organization. This puritanical work ethic of the left

\* It is my own belief that the development of the "workers' state" in Russia thoroughly supports the anarchist critique of Marxist statism. Indeed, modern Marxists would do well to consult Marx's own discussion of commodity fetishism in *Capital* to understand how everything (including the state) tends to become an end in itself under conditions of commodity exchange.

t The distinction between pleasurable work and onerous toil should always be kept in mind.

did not diminish with the passage of time and in fact acquired a certain urgency in the 1930s. Mass unemployment made the job and the social organization of labor the central themes of socialist propaganda in the 1930s. Instead of focusing their message on the emancipation of man from toil, socialists tended to depict socialism as a beehive of industrial activity, humming with work for all. The Communists pointed to Russia as a land where every able-bodied individual was employed and where labor was continually in demand. Surprising as it may seem today, little more than a generation ago socialism was equated with a work-oriented society and liberty with the material security provided by full employment. The world of necessity had subtly invaded and corrupted the ideal of freedom.

That the socialist notions of the last generation now seem to be anachronisms is not due to any superior insights that prevail today. The last three decades, particularly the years of the late 1950s, mark a turning point in technological development, a technological revolution that negates all the values, political schemes and social perspectives held by mankind throughout all previous recorded history. After thousands of years of tortuous development, the countries of the Western world (and potentially all countries) are confronted by the possibility of a materially abundant, almost workless era in which most of the means of life can be provided by machines. As we shall see, a new technology has developed that could largely replace the realm of necessity by the realm of freedom. So obvious is this fact to millions of people in the United States and Europe that it no longer requires elaborate explanations or theoretical exegesis. This technological revolution and the prospects it holds for society as a whole form the premises of radically new lifestyles among today's young people, a generation that is rapidly divesting itself of the values and the age-old work-oriented traditions of its elders. Even recent demands for a guaranteed annual income sound like

faint echoes of the new reality that currently permeates the thinking of the young. Owing to the development of a cybernetic technology, the notion of a toil-less mode of life has become an article of faith to an ever-increasing number of young people.

In fact, the real issue we face today is not whether this new technology can provide us with the means of life in a toil-less society, but whether it can help to *humanize* society, whether it can contribute to the creation of entirely new relationships between man and man. The demand for a guaranteed annual income is still anchored in the *quantitative* promise of technology—in the possibility of satisfying material needs without toil. This quantitative approach is already lagging behind technological developments that carry a new *qualitative* promise—the promise of decentralized, communitarian lifestyles, or what I prefer to call ecological forms of human association.\*

I am asking a question that is quite different from what is ordinarily posed with respect to modern technology. Is this technology staking out a new dimension in human freedom, in the liberation of man? Can it not only liberate man from want and work, but also lead him to a free, harmonious, balanced human community—an ecocommunity that would promote the unrestricted development of

\* An exclusively quantitative approach to the new technology, I may add, is not only economically archaic, but morally regressive. This approach partakes of the old principle of justice, as distinguished from the new principle of freedom. Historically, justice is derived from the world of material necessity and toil; it implies relatively scarce resources which are apportioned by a moral principle which is either "just" or "unjust." Justice, even "equal" justice, is a concept of limitation, involving the denial of goods and the sacrifice of time and energy to production. Once we transcend the concept of justice—indeed, once we pass from the quantitative to the qualitative potentialities of modern technology—we enter the unexplored domain of freedom, based on spontaneous organization and full access to the means of life.

his potentialities? Finally, can it carry man beyond the realm of freedom into the realm of life and desire?

#### *THE POTENTIALITIES OF MODERN TECHNOLOGY*

Let me try to answer these questions by pointing to a new feature of modern technology. For the first time in history, technology has reached an open end. The potential for technological development, for providing machines as substitutes for labor is virtually unlimited. Technology has finally passed from the realm of *invention* to that of *design*—in other words, from fortuitous discoveries to systematic innovations.

The meaning of this qualitative advance has been stated in a rather freewheeling way by Vannevar Bush, the former director of the Office of Scientific Research and Development:

Suppose, fifty years ago, that someone had proposed making a device which would cause an automobile to follow a white line down the middle of the road, automatically and even if the driver fell asleep. ... He would have been laughed at, and his idea would have been called preposterous. So it would have been then. But suppose someone called for such a device today, and was willing to pay for it, leaving aside the question of whether it would actually be of any genuine use whatever. Any number of concerns would stand ready to contract and build it. No real invention would be required. There are thousands of young men in the country to whom the design of such a device would be a pleasure. They would simply take off the shelf some photocells, thermionic tubes, servomechanisms, relays and, if urged, they would build what they call a breadboard model, and it would work. The point is that the presence of a host of

versatile, cheap, reliable gadgets, and the presence of men who understand fully all their queer ways, has rendered the building of automatic devices almost straightforward and routine. It is no longer a question of whether they can be built, it is rather a question of whether they are worth building.<sup>14</sup>

Bush focuses here on the two most important features of the new, so-called "second," industrial revolution, namely the enormous potentialities of modern technology and the cost-oriented, nonhuman limitations that are imposed upon it. I shall not belabor the fact that the cost factor—the profit motive, to state it bluntly—inhibits the use of technological innovations. It is fairly well established that in many areas of the economy it is cheaper to use labor than machines.\* Instead, I would like to review several developments which have brought us to an open end in technology and deal with a number of practical applications that have profoundly affected the role of labor in industry and agriculture.

Perhaps the most obvious development leading to the new technology has been the increasing interpenetration of scientific abstraction, mathematics and analytic methods with the concrete, pragmatic and rather mundane tasks of industry. This order of relationships is relatively new. Traditionally, speculation, generalization and rational activity were sharply divorced from technology. This chasm reflected the sharp split between the leisured and working classes in ancient and medieval society. If one leaves aside the inspired works of a few rare men, applied science did not come into its own until the Renaissance, and it only began to flourish in the eighteenth and nineteenth centuries.

\* For example, in cotton plantations in the Deep South, in automobile assembly plants, and in the garment industry.

The men who personify the application of science to technological innovation are not the inventive tinkerers like Edison, but the systematic investigators with catholic interests like Faraday, who add simultaneously to man's knowledge of scientific principles and to engineering. In our own day this synthesis, once embodied by the work of a single, inspired genius, is the work of anonymous teams. Although these teams have obvious advantages, they often have all the traits of bureaucratic agencies—which leads to a mediocre, unimaginative treatment of problems.

Less obvious is the impact produced by industrial growth. This impact is not always technological; it is more than the substitution of machines for human labor. One of the most effective means of increasing output, in fact, has been the continual reorganization of the labor process, extending and sophisticating the division of labor. Ironically, the steady breakdown of tasks to ever more inhuman dimensions—to an intolerably minute, fragmented series of operations and to a cruel simplification of the work process—suggests the machine that will recombine all the separate tasks of many workers into a single mechanized operation. Historically, it would be difficult to understand how mechanized mass manufacture emerged, how the machine increasingly displaced labor, without tracing the development of the work process from craftsmanship, where an independent, highly skilled worker engages in many diverse operations, through the purgatory of the factory, where these diverse tasks are parceled out among a multitude of unskilled or semiskilled employees, to the highly mechanized mill, where the tasks of many are largely taken over by machines manipulated by a few operatives, and finally to the automated and cybernated plant, where operatives are replaced by supervisory technicians and highly skilled maintenance men.

Looking further into the matter, we find still another new development: the machine has evolved from an exten-

sion of human muscles into an extension of the human nervous system. In the past, both tools and machines enhanced man's muscular power over raw materials and natural forces. The mechanical devices and engines developed during the eighteenth and nineteenth centuries did not replace human muscles but rather enlarged their effectiveness. Although the machines increased output enormously, the worker's muscles and brain were still required to operate them, even for fairly routine tasks. The calculus of technological advance could be formulated in strict terms of labor productivity: one man, using a given machine, produced as many commodities as five, ten, fifty, or a hundred before the machine was employed. Nasmyth's steam hammer, exhibited in 1851, could shape iron beams with only a few blows, an effort that would have required many manhours of labor without the machine. But the hammer required the muscles and judgment of half a dozen able-bodied men to pull, hold and remove the casting. In time, much of this work was diminished by the invention of handling devices, but the labor and judgment involved in operating the machines formed an indispensable part of the productive process.

The development of fully automatic machines for complex mass-manufacturing operations requires the successful application of at least three technological principles: such machines must have a built-in ability to correct their own errors; they must have sensory devices for replacing the visual, auditory and tactile senses of the worker; and, finally, they must have devices that substitute for the worker's judgment, skill and memory. The effective use of these three principles presupposes that we have also developed the technological means (the effectors, if you will) for applying the sensory, control and mind-like devices in everyday industrial operation; further, effective use presupposes that we can adapt existing machines or develop new ones for handling, shaping, assembling, packaging and

transporting semi-finished and finished products.

The use of automatic, self-correcting control devices in industrial operations is not new. James Watt's flyball governor, invented in 1788, provides an early mechanical example of how steam engines were self-regulated. The governor, which is attached by metal arms to the engine valve, consists of two freely mounted metal balls supported by a thin, rotating rod. If the engine begins to operate too rapidly, the increased rotation of the rod impels the balls outward by centrifugal force, closing the valve; conversely, if the valve does not admit sufficient steam to operate the engine at the desired rate, the balls collapse inward, opening the valve further. A similar principle is involved in the operation of thermostatically controlled heating equipment. The thermostat, manually preset by a dial to a desired temperature level, automatically starts up heating equipment when the temperature falls and turns off the equipment when the temperature rises.

Both control devices illustrate what is now called the "feedback principle." In modern electronic equipment, the deviation of a machine from a desired level of operation produces electrical signals which are then used by the control device to correct the deviation or error. The electrical signals induced by the error are amplified and fed back by the control system to other devices which adjust the machine. A control system in which a departure from the norm is actually used to adjust a machine is called a *closed* system. This may be contrasted with an *open* system—a manually operated wall switch or the arms that automatically rotate an electrical fan—in which the control operates without regard to the function of the device. Thus, if the wall switch is flicked, electric lights go on or off whether it is night or day; similarly the electric fan will rotate at the same speed whether a room is warm or cool. The fan may be automatic in the popular sense of the term, but it is not

self-regulating like the flyball governor and the thermostat. An important step toward developing self-regulating control mechanisms was the discovery of sensory devices. Today these include thermocouples, photoelectric cells, X-ray machines, television cameras and radar transmitters. Used together or singly they provide machines with an amazing degree of autonomy. Even without computers, these sensory devices make it possible for workers to engage in extremely hazardous operations by remote control. They can also be used to turn many traditional open systems into closed ones, thereby expanding the scope of automatic operations. For example, an electric light controlled by a clock represents a fairly simple open system; its effectiveness depends entirely upon mechanical factors. Regulated by a photoelectric cell that turns it off when daylight approaches, the light responds to daily variations in sunrise and sunset. Its operation is now meshed with its function.

With the advent of the computer we enter an entirely new dimension of industrial control systems. The computer is capable of performing all the routine tasks that ordinarily burdened the mind of the worker a generation or so ago. Basically, the modern digital computer is an electronic calculator capable of performing arithmetical operations enormously faster than the human brain.\* This element of speed is a crucial factor: the enormous rapidity of computer operations—a quantitative superiority of computer over human calculations—has profound qualitative significance. By virtue of its speed, the computer can perform highly sophisticated mathematical and logical operations. Supported by memory units that store millions of bits of information, and using binary arithmetic (the

\* There are two broad classes of computers in use today: analogue and digital computers. The analogue computer has a fairly limited use in industrial operations. My discussion on computers in this article will deal entirely with digital computers.

substitution of the digits 0 and 1 for the digits 0 through 9), a properly programmed digital computer can perform operations that approximate many highly developed logical activities of the mind. It is arguable whether computer "intelligence" is, or ever will be, creative or innovative (although every few years bring sweeping changes in computer technology), but there is no doubt that the digital computer is capable of taking over all the onerous and distinctly uncreative mental tasks of man in industry, science, engineering, information retrieval and transportation. Modern man, in effect, has produced an electronic "mind" for coordinating, building and evaluating most of his routine industrial operations. Properly used within the sphere of competence for which they are designed, computers are faster and more efficient than man himself.

What is the concrete significance of this new industrial revolution? What are its immediate and foreseeable implications for work? Let us trace the impact of the new technology on the work process by examining its application to the manufacture of automobile engines at the Ford plant in Cleveland. This single instance of technological sophistication will help us assess the liberatory potential of the new technology in all manufacturing industries.

Until the advent of cybernation in the automobile industry, the Ford plant required about three hundred workers, using a large variety of tools and machines, to turn an engine block into an engine. The process from foundry casting to a fully machined engine took many manhours to perform. With the development of what we commonly call an "automated" machine system, the time required to transform the casting into an engine was reduced to less than fifteen minutes. Aside from a few monitors to watch the automatic control panels, the original three-hundred-man labor force was eliminated. Later a computer was added to the machining system, turning it into a truly closed, cybernated system. The computer regu-

lates the entire machining process, operating on an electronic pulse that cycles at a rate of three-tenths of a millionth of a second.

But even this system is obsolete. "The next generation of computing machines operates a thousand times as fast—at a pulse rate of one in every three-tenths of a billionth of a second," observes Alice Mary Hilton. "Speeds of millionths and billionths of a second are not really intelligible to our finite minds. But we can certainly understand that the advance has been a thousand-fold within a year or two. A thousand times as much information can be handled or the same amount of information can be handled a thousand times as fast. A job that takes more than sixteen hours can be done in one minute! And without any human intervention! Such a system does not control merely an assembly line but a complete manufacturing and industrial process!"<sup>15</sup>

There is no reason why the basic technological principles involved in cybernating the manufacture of automobile engines cannot be applied to virtually every area of mass manufacture—from the metallurgical industry to the food processing industry, from the electronics industry to the toymaking industry, from the manufacture of prefabricated bridges to the manufacture of prefabricated houses. Many phases of steel production, tool-and-die making, electronic equipment manufacture and industrial chemical production are now partly or largely automated. What tends to delay the advance of complete automation to every phase of modern industry is the enormous cost involved in replacing existing industrial facilities by new, more sophisticated ones and also the innate conservatism of many major corporations. Finally, as I mentioned before, it is still cheaper to use labor instead of machines in many industries.

To be sure, every industry has its own particular problems, and the application of a toil-less technology to a

specific plant would doubtless reveal a multitude of kinks that would require painstaking solutions. In many industries it would be necessary to alter the shape of the product and the layout of the plants so that the manufacturing process would lend itself to automated techniques. But to argue from these problems that the application of a fully automated technology to a specific industry is impossible would be as preposterous as to have argued eighty years ago that flight was impossible because the propeller of an experimental airplane did not revolve fast enough or the frame was too fragile to withstand buffeting by the wind. There is practically no industry that cannot be fully automated if we are willing to redesign the product, the plant, the manufacturing procedures and the handling methods. In fact, any difficulty in describing how, where or when a given industry will be automated arises not from the unique problems we can expect to encounter but rather from the enormous leaps that occur every few years in modern technology. Almost every account of applied automation today must be regarded as provisional: as soon as one describes a partially automated industry, technological advances make the description obsolete.

There is one area of the economy, however, in which any form of technological advance is worth describing—the area of work that is most brutalizing and degrading for man. If it is true that the moral level of a society can be gauged by the way it treats women, its sensitivity to human suffering can be gauged by the working conditions it provides for people in raw materials industries, particularly in mines and quarries. In the ancient world, mining was often a form of penal servitude, reserved primarily for the most hardened criminals, the most intractable slaves, and the most hated prisoners of war. The mine is the day-to-day actualization of man's image of hell; it is a deadening, dismal, inorganic world that demands pure mindless toil.

Field and forest and stream and ocean are the environment of life: the mine is the environment alone of ores, minerals, metals [writes Lewis Mumford].... In hacking and digging the contents of the earth, the miner has no eye for the forms of things: what he sees is sheer matter and until he gets to his vein it is only an obstacle which he breaks through stubbornly and sends up to the surface. If the miner sees shapes on the walls of his cavern, as the candle flickers, they are only the monstrous distortions of his pick or his arm: shapes of fear. Day has been abolished and the rhythm of nature broken: continuous day-and-night production first came into existence here. The miner must work by artificial light even though the sun be shining outside; still further down in the seams, he must work by artificial ventilation, too: a triumph of the 'manufactured environment.'<sup>16</sup>

The abolition of mining as a sphere of human activity would symbolize, in its own way, the triumph of a liberatory technology. That we can point to this achievement already, even in a single case at this writing, presages the freedom from toil implicit in the technology of our time. The first major step in this direction was the continuous miner, a giant cutting machine with nine-foot blades that slices up eight tons of coal a minute from the coal face. It was this machine, together with mobile loading machines, power drills and roof bolting, that reduced mine employment in areas like West Virginia to about a third of the 1948 levels, at the same time nearly doubling individual output. The coal mine still required miners to place and operate the machines. The most recent technological advances, however, replace the operators by radar sensing devices and eliminate the miner completely.

By adding sensing devices to automatic machinery we could easily remove the worker not only from the large, productive mines needed by the economy, but also from forms of agricultural activity patterned on modern industry. Although the wisdom of industrializing and mechanizing agriculture is highly questionable (I shall return to this subject at a later point), the fact remains that if society so chooses, it can automate large areas of industrial agriculture, ranging from cotton picking to rice harvesting. We could operate almost any machine, from a giant shovel in an open-strip mine to a grain harvester in the Great Plains, either by cybernated sensing devices or by remote control with television cameras. The effort needed to operate these devices and machines at a safe distance, in comfortable quarters, would be minimal, assuming that a human operator were required at all.

It is easy to foresee a time, by no means remote, when a rationally organized economy could automatically manufacture small "packaged" factories without human labor; parts could be produced with so little effort that most maintenance tasks would be reduced to the simple act of removing a defective unit from a machine and replacing it by another—a job no more difficult than pulling out and putting in a tray. Machines would make and repair most of the machines required to maintain such a highly industrialized economy. Such a technology, oriented entirely toward human needs and freed from all consideration of profit and loss, would eliminate the pain of want and toil—the penalty, inflicted in the form of denial, suffering and inhumanity, exacted by a society based on scarcity and labor.

The possibilities created by a cybernated technology would no longer be limited merely to the satisfaction of man's material needs. We would be free to ask how the machine, the factory and the mine could be used to foster human solidarity and to create a balanced relationship

with nature and a truly organic ecocommunity. Would our new technology be based on the same national division of labor that exists today? The current type of industrial organization—an extension, in effect, of the industrial forms created by the Industrial Revolution—fosters industrial centralization (although a system of workers' management based on the individual factory and local community would go far toward eliminating this feature).

Or does the new technology lend itself to a system of small-scale production, based on a regional economy and structured physically on a human scale? This type of industrial organization places *all* economic decisions in the hands of the local community. To the degree that material production is decentralized and localized, the primacy of the community is asserted over national institutions—assuming that any such national institutions develop to a significant extent. In these circumstances, the popular assembly of the local community, convened in a face-to-face democracy, takes over the *full* management of social life. The question is whether a future society will be organized around technology or whether technology is now sufficiently malleable so that it can be organized around society. To answer this question, we must further examine certain features of the new technology.

#### *THE NEW TECHNOLOGY AND THE HUMAN SCALE*

In 1945, J. Presper Eckert, Jr. and John W. Mauchly of the University of Pennsylvania unveiled ENIAC, the first digital computer to be designed entirely along electronic principles. Commissioned for use in solving ballistic problems, ENIAC required nearly three years of work to design and build. The computer was enormous. It weighed more than thirty tons, contained 18,800 vacuum tubes with half a million connections (these connections took Eckert and Mauchly two and a half years to solder), a vast network of resistors, and miles of wiring. The computer required a

large air-conditioning unit to cool its electronic components. It often broke down or behaved erratically, requiring time-consuming repairs and maintenance. Yet by all previous standards of computer development, ENIAC was an electronic marvel. It could perform five thousand computations a second, generating electrical pulse signals that cycled at 100,000 a second. None of the mechanical or electro-mechanical computers in use at the time could approach this rate of computational speed.

Some twenty years later, the Computer Control Company of Framingham, Massachusetts, offered the DDP-124 for public sale. The DDP-124 is a small, compact computer that closely resembles a bedside AM-radio receiver. The entire ensemble, together with a typewriter and memory unit, occupies a typical office desk. The DDP-124 performs over 285,000 computations a second. It has a true stored-program memory that can be expanded to retain nearly 33,000 words (the "memory" of ENIAC, based on preset plug wires, lacked anything like the flexibility of present-day computers); its pulses cycle at 1.75 billion per second. The DDP-124 does not require any air-conditioning unit; it is completely reliable, and it creates very few maintenance problems. It can be built at a minute fraction of the cost required to construct ENIAC.

The difference between ENIAC and DDP-124 is one of degree rather than kind. Leaving aside their memory units, both digital computers operate according to the same electronic principles. ENIAC, however, was composed primarily of traditional electronic components (vacuum tubes, resistors, etc.) and thousands of feet of wire; the DDP-124, on the other hand, relies primarily on microcircuits. These microcircuits are very small electronic units that pack the equivalent of ENIAC's key electronic components into squares a mere fraction of an inch in size.

Paralleling the miniaturization of computer components is the remarkable sophistication of traditional forms of

technology. Ever-smaller machines are beginning to replace large ones. For example, a fascinating breakthrough has been achieved in reducing the size of continuous hot-strip steel rolling mills. This kind of mill is one of the largest and costliest facilities in modern industry. It may be regarded as a single machine, nearly a half mile in length, capable of reducing a ten-ton slab of steel about six inches thick and fifty inches wide to a thin strip of sheet metal a tenth or a twelfth of an inch thick. This installation alone, including heating furnaces, coilers, long roller tables, scale-breaker stands and buildings, may cost tens of millions of dollars and occupy fifty acres or more. It produces three hundred tons of steel sheet an hour. To be used efficiently, such a continuous hot-strip mill must be operated together with large batteries of coke ovens, open-hearth furnaces, blooming mills, etc. These facilities, in conjunction with hot and cold rolling mills, may cover several square miles. Such a steel complex is geared to a national division of labor, to highly concentrated sources of raw materials (generally located at a great distance from the complex), and to large national and international markets. Even if it is totally automated, its operating and management needs far transcend the capabilities of a small, decentralized community. The type of administration it requires tends to foster centralized social forms.

Fortunately, we now have a number of alternatives—more efficient alternatives in many respects—to the modern steel complex. We can replace blast furnaces and open-hearth furnaces by a variety of electric furnaces which are generally quite small and produce excellent pig iron and steel; they can operate not only with coke but also with anthracite coal, charcoal, and even lignite. Or we can choose the HyL process, a batch process in which natural gas is used to turn high-grade ores or concentrates into sponge iron. Or we can turn to the Wiberg process, which involves the use of charcoal, carbon monoxide and hydro-

gen. In any case, we can reduce the need for coke ovens, blast furnaces, open hearth furnaces, and possibly even solid reducing agents.

One of the most important steps towards scaling a steel complex to community dimensions is the development of the planetary mill by T. Sendzimir. The planetary mill reduces the typical continuous hot-strip mill to a single planetary stand and a light finishing stand. Hot steel slabs, two and a quarter inches thick, pass through two small pairs of heated feed rolls and a set of work rolls mounted in two circular cages which also contain two backup rolls. By operating the cages and backup rolls at different rotational speeds, the work rolls are made to turn in two directions. This gives the steel slab a terrific mauling and reduces it to a thickness of only one-tenth of an inch. Sendzimir's planetary mill is a stroke of engineering genius; the small work rolls, turning on the two circular cages, replace the need for the four huge roughing stands and six finishing stands in a continuous hot-strip mill.

The rolling of hot steel slabs by the Sendzimir process requires a much smaller operational area than a continuous hot-strip mill. With continuous casting, moreover, we can produce steel slabs without the need for large, costly slabbing mills. A future steel complex based on electric furnaces, continuous casting, a planetary mill and a small continuous cold-reducing mill would require a fraction of the acreage occupied by a conventional installation. It would be fully capable of meeting the steel needs of several moderate-sized communities with low quantities of fuel.

The complex I have described is not designed to meet the needs of a national market. On the contrary, it is suited only for meeting the steel requirements of small or moderate-sized communities and industrially undeveloped countries. Most electric furnaces for pig-iron production produce about a hundred to two hundred and fifty tons a

day, while large blast furnaces produce three thousand tons daily. A planetary mill can roll only a hundred tons of steel strip an hour, roughly a third of the output of a continuous hot-strip mill. Yet the very scale of our hypothetical steel complex constitutes one of its most attractive features. Also, the steel produced by our complex is more durable, so the community's rate of replenishing its steel products would be appreciably reduced. Since the smaller complex requires ore, fuel and reducing agents in relatively small quantities, many communities could rely on local resources for their raw materials, thereby conserving the more concentrated resources of centrally located sources of supply, strengthening the independence of the community itself vis-a-vis the traditional centralized economy, and reducing the expense of transportation. What would at first glance seem to be a costly, inefficient duplication of effort that could be avoided by building a few centralized steel complexes would prove, in the long run, to be more efficient as well as socially more desirable.

The new technology has produced not only miniaturized electronic components and smaller production facilities but also highly versatile, multi-purpose machines. For more than a century, the trend in machine design moved increasingly toward technological specialization and single purpose devices, underpinning the intensive division of labor required by the new factory system. Industrial operations were subordinated entirely to the product. In time, this narrow pragmatic approach has "led industry far from the rational line of development in production machinery," observe Eric W. Leaver and John J. Brown. "It has led to increasingly uneconomic specialization. . . . Specialization of machines in terms of end product requires that the machine be thrown away when the product is no longer needed. Yet the work the production machine does can be reduced to a set of basic functions—forming, holding, cutting, and so on—and these functions, if correctly

analyzed, can be packaged and applied to operate on a part as needed."<sup>17</sup>

Ideally, a drilling machine of the kind envisioned by Leaver and Brown would be able to produce a hole small enough to hold a thin wire or large enough to admit a pipe. Machines with this operational range were once regarded as economically prohibitive. By the mid-1950s, however, a number of such machines were actually designed and put to use. In 1954, for example, a horizontal boring mill was built in Switzerland for the Ford Motor Company's River Rouge Plant at Dearborn, Michigan. This boring mill would qualify beautifully as a Leaver and Brown machine. Equipped with five optical microscope-type illuminated control gauges, the mill drills holes smaller than a needle's eye or larger than a man's fist. The holes are accurate to a ten-thousandth of an inch.

The importance of machines with this kind of operational range can hardly be overestimated. They make it possible to produce a large variety of products in a single plant. A small or moderate-sized community using multipurpose machines could satisfy many of its limited industrial needs without being burdened with underused industrial facilities. There would be less loss in scrapping tools and less need for single-purpose plants. The community's economy would be more compact and versatile, more rounded and self-contained, than anything we find in the communities of industrially advanced countries. The effort that goes into retooling machines for new products would be enormously reduced. Retooling would generally consist of changes in dimensioning rather than in design. Finally, multipurpose machines with a wide operational range are relatively easy to automate. The changes required to use these machines in a cybernated industrial facility would generally be in circuitry and programming rather than in machine form and structure.

Single purpose machines, of course, would continue to

exist, and they would still be used for the mass manufacture of a large variety of goods. At present many highly automatic, single-purpose machines could be employed with very little modification by decentralized communities. Bottling and canning machines, for example, are compact, automatic and highly rationalized installations. We could expect to see smaller automatic textile, chemical processing and food processing machines. A major shift from conventional automobiles, buses and trucks to electric vehicles would undoubtedly lead to industrial facilities much smaller in size than existing automobile plants. Many of the remaining centralized facilities could be effectively decentralized simply by making them as small as possible and sharing their use among several communities.

I do not claim that all of man's economic activities can be completely decentralized, but the majority can surely be scaled to human and communitarian dimensions. This much is certain: we can shift the center of economic power from national to local scale and from centralized bureaucratic forms to local, popular assemblies. This shift would be a revolutionary change of vast proportions, for it would create powerful economic foundations for the sovereignty and autonomy of the local community.

#### *THE ECOLOGICAL USE OF TECHNOLOGY*

I have tried, thus far, to deal with the possibility of eliminating toil, material insecurity, and centralized economic control-issues which, if "utopian," are at least tangible. In the present section I would like to deal with a problem that may seem highly subjective but which is nonetheless of compelling importance—the need to make man's dependence upon the natural world a visible and living part of his culture.

Actually, this problem is peculiar only to a highly urbanized and industrialized society. In nearly all preindus-

trial cultures, man's relationship to his natural environment was well defined, viable, and sanctified by the full weight of tradition. Changes in season, variations in rainfall, the life cycles of the plants and animals on which humans depended for food and clothing, the distinctive features of the area occupied by the community—all were familiar and comprehensible, and evoked in men a sense of religious awe, of oneness with nature, and, more pragmatically, a sense of respectful dependence. Looking back to the earliest civilizations of the Western world, we rarely find evidence of a system of social tyranny so overbearing and ruthless that it ignored this relationship. Barbarian invasions and, more insidiously, the development of commercial civilizations may have destroyed the reverential attitude of agrarian cultures toward nature, but the normal development of agricultural systems, however exploitative they were of men, rarely led to the destruction of the soil and terrain. During the most oppressive periods in the history of ancient Egypt and Mesopotamia, the ruling classes kept the irrigation dikes in good repair and tried to promote rational methods of food cultivation. Even the ancient Greeks, heirs to a thin, mountainous forest soil that suffered heavily from erosion, shrewdly reclaimed much of their arable land by turning to orchardry and viticulture. It was not until commercial agricultural systems and highly urbanized societies developed that the natural environment was unsparingly exploited. Some of the worst cases of soil destruction in the ancient world were provided by the giant, slave-worked commercial farms of North Africa and the Italian peninsula.

In our own time, the development of technology and the growth of cities has brought man's alienation from nature to the breaking point. Western man finds himself confined to a largely synthetic urban environment, far removed physically from the land, and his relationship to the natural world is mediated entirely by machines. He

lacks familiarity with how most of his goods are produced, and his foods bear only the faintest resemblance to the animals and plants from which they were derived. Boxed into a sanitized urban milieu (almost institutional in form and appearance), modern man is denied even a spectator's role in the agricultural and industrial systems that satisfy his material needs. He is a pure consumer, an insensate receptacle. It would be unfair, perhaps, to say that he is disrespectful toward the natural environment; the fact is, he scarcely knows what ecology means or what his environment requires to remain in balance.

The balance between man and nature must be restored. I have tried to show elsewhere that unless we establish some kind of equilibrium between man and the natural world, the viability of the human species will be placed in grave jeopardy.\* Here I shall try to show how the new technology can be used ecologically to reawaken man's sense of dependence upon the environment; I shall try to show how, by reintroducing the natural world into the human experience, we can contribute to the achievement of human wholeness.

The classical Utopians fully realized that the first step towards wholeness must be to remove the contradiction between town and country. "It is impossible," wrote Fourier nearly a century and a half ago, "to organize a regular and well balanced association without bringing into play the labors of the field, or at least gardens, orchards, flocks and herds, poultry yards, and a great variety of species, animal and vegetable." Shocked by the social effects of the Industrial Revolution, Fourier added: "They are ignorant of this principle in England, where they experiment with artisans, with manufacturing labor alone, which cannot by itself suffice to sustain social union."<sup>18</sup>

To argue that the modern urban dweller should once again enjoy "the labors of the field" might well seem like

\* See "Ecology and Revolutionary Thought."

gallows humor. A restoration of peasant agriculture prevalent in Fourier's day is neither possible nor desirable. Charles Gide was surely correct when he observed that agricultural labor "is not necessarily more attractive than industrial labor; to till the earth has always been regarded ... as the type of painful toil, of toil which is done with 'the sweat of one's brow.' "<sup>19</sup> Fourier does not answer this objection by suggesting that his phalansteries will mainly cultivate fruits and vegetables instead of grains. If our vision were to extend no further than prevailing techniques of land management, the only alternative to peasant agriculture would seem to be a highly specialized and centralized form of farming, its techniques paralleling the methods used in present-day industry. Far from achieving a balance between town and country, we would be faced with a synthetic environment that had totally assimilated the natural world.

If we grant that the land and the community must be reintegrated physically, that the community must exist in an agricultural matrix which renders man's dependence upon nature explicit, the problem we face is how to achieve this transformation without imposing "painful toil" on the community. How, in short, can husbandry, ecological forms of food cultivation and farming on a human scale be practiced without sacrificing mechanization?

Some of the most promising technological advances in agriculture made since World War II are as suitable for small-scale, ecological forms of land management as they are for the immense, industrial-type commercial units that have become prevalent over the past few decades. Let us consider an example. The augermatic feeding of livestock illustrates a cardinal principle of rational farm mechanization—the deployment of conventional machines and devices in a way that virtually eliminates arduous farm labor. By linking a battery of silos with augers, different nutrients can be mixed and transported to feed pens merely by

pushing some buttons and pulling a few switches. A job that may have required the labor of five or six men working half a day with pitchforks and buckets can now be performed by one man in a few minutes. This type of mechanization is intrinsically neutral: it can be used to feed immense herds or just a few hundred head of cattle; the silos may contain natural feed or synthetic, hormonized nutrients; the feeder can be employed on relatively small farms with mixed livestock or on large beef-raising ranches, or on dairy farms of all sizes. In short, augermatic feeding can be placed in the service of the most abusive kind of commercial exploitation or of the most sensitive applications of ecological principles.

This holds true for most of the farm machines that have been designed (in many cases simply redesigned to achieve greater versatility) in recent years. The modern tractor, for example, is a work of superb mechanical ingenuity. Garden-type models can be used with extraordinary flexibility for a large variety of tasks; they are light and extremely manageable, and they can follow the contour of the most exacting terrain without damaging the land. Large tractors, especially those used in hot climates, are likely to have air-conditioned cabs; in addition to pulling equipment, they may have attachments for digging postholes, for doing the work of forklift trucks, or even for providing power units for grain elevators. Plows have been developed to meet every contingency in tillage. Advanced models are even regulated hydraulically to rise and fall with the lay of the land. Mechanical planters are available for virtually every kind of crop. "Minimum tillage" is achieved by planters which apply seed, fertilizer and pesticides (of course!) simultaneously, a technique that telescopes several different operations into a single one and reduces the soil compaction often produced by the recurrent use of heavy machines.

The variety of mechanical harvesters has reached daz-



zling proportions. Harvesters have been developed for many different kinds of orchards, berries, vines, vegetables and field crops. Barns, feed pens and storage units have been totally revolutionized by augers, conveyor belts, airtight silos, automatic manure removers, climate-control devices, etc. Crops are mechanically shelled, washed, counted, preserved by freezing or canning, packaged and crated. The construction of concrete-lined irrigation ditches has become a simple mechanical operation that can be performed by one or two excavating machines. Terrain with poor drainage or subsoil can be improved by earth-moving equipment and by tillage devices that penetrate beyond the true soil.

Although a great deal of agricultural research is devoted to the development of harmful chemical agents and nutritionally dubious crops, there have been extraordinary advances in the genetic improvement of food plants. Many new grain and vegetable varieties are resistant to insect predators, plant diseases, and cold weather. In many cases, these varieties are a definite improvement over natural ancestral types and they have been used to open large areas of intractable land to food cultivation.

Let us pause at this point to envision how our free community might be integrated with its natural environment. We suppose the community to have been established after a careful study has been made of its natural ecology—its air and water resources, its climate, its geological formations, its raw materials, its soils, and its natural flora and fauna. Land management by the community is guided entirely by ecological principles, so that an equilibrium is maintained between the environment and its human inhabitants. Industrially rounded, the community forms a distinct unit within a natural matrix; it is socially and aesthetically in balance with the area it occupies.

Agriculture is highly mechanized in the community, but as mixed as possible with respect to crops, livestock and

timber. Variety of flora and fauna is promoted as a means of controlling pest infestations and enhancing scenic beauty. Large-scale farming is practiced only where it does not conflict with the ecology of the region. Owing to the generally mixed character of food cultivation, agriculture is pursued by small farming units, each demarcated from the others by tree belts, shrubs, pastures and meadows. In rolling, hilly or mountainous country, land with sharp gradients is covered by timber to prevent erosion and conserve water. The soil on each acre is studied carefully and committed only to those crops for which it is most suited. Every effort is made to blend town and country without sacrificing the distinctive contribution that each has to offer to the human experience. The ecological region forms the living social, cultural and biotic boundaries of the community or of the several communities that share its resources. Each community contains many vegetable and flower gardens, attractive arbors, park land, even streams and ponds which support fish and aquatic birds. The countryside, from which food and raw materials are acquired, not only constitutes the immediate environs of the community, accessible to all by foot, but also invades the community. Although town and country retain their identity and the uniqueness of each is highly prized and fostered, nature appears everywhere in the town, and the town seems to have caressed and left a gentle, human imprint on nature.

I believe that a free community will regard agriculture as husbandry, an activity as expressive and enjoyable as crafts. Relieved of toil by agricultural machines, communitarians will approach food cultivation with the same playful and creative attitude that men so often bring to gardening. Agriculture will become a living part of human society, a source of pleasant physical activity and, by virtue of its ecological demands, an intellectual, scientific and artistic challenge. Communitarians will blend with the

world of life around them as organically as the community blends with its region. They will regain the sense of oneness with nature that existed in humans from primordial times. Nature and the organic modes of thought it always fosters will become an integral part of human culture; it will reappear with a fresh spirit in man's paintings, literature, philosophy, dances, architecture, domestic furnishings, and in his very gestures and day-to-day activities. Culture and the human psyche will be thoroughly suffused by a new animism. The region will never be exploited, but it will be used as fully as possible. Every attempt will be made by the community to satisfy its requirements locally—to use the region's energy resources, minerals, timber, soil, water, animals and plants as rationally and humanistically as possible and without violating ecological principles. In this connection, we can foresee that the community will employ new techniques that are still being developed today, many of which lend themselves superbly to a regionally based economy. I refer here to methods for extracting trace and diluted resources from the earth, water and air; to solar, wind, hydroelectric and geothermal energy; to the use of heat pumps, vegetable fuels, solar ponds, thermoelectric converters and, eventually, controlled thermonuclear reactions.

There is a kind of industrial archeology that reveals in many areas the evidence of a once-burgeoning economic activity long abandoned by our predecessors. In the Hudson Valley, the Rhine Valley, the Appalachians and the Pyrenees, we find the relics of mines and once highly-developed metallurgical crafts, the fragmentary remains of local industries, and the outlines of long-deserted farms—all vestiges of flourishing communities based on local raw materials and resources. These communities declined because the products they once furnished were elbowed out by large-scale, national industries based on mass production techniques and concentrated sources of raw materials.

The old resources are often still available for use by each locality; "valueless" in a highly urbanized society, they are eminently suitable for use by decentralized communities and they await the application of industrial techniques that are adapted for small-scale quality production. If we were to take a careful inventory of the resources available in many depopulated regions of the world, the possibility that communities could satisfy many of their material needs locally is likely to be much greater than we suspect.

Technology, by its continual development, tends to expand local possibilities. As an example, let us consider how seemingly inferior and highly intractable resources are made available by technological advances. Throughout the late nineteenth and early twentieth centuries, the Mesabi range in Minnesota provided the American steel industry with extremely rich ores, an advantage which promoted the rapid expansion of the domestic metal industry. As these reserves declined, the country was faced with the problem of mining taconite, a low-grade ore that is about forty percent iron. Conventional mining methods are virtually impossible; it takes a churn drill an hour to bite through only one foot of taconite. Recently, however, the mining of taconite became feasible; a jet-flame drill was developed which cuts through the ore at the rate of twenty to thirty feet an hour. After holes are burned by the flame, the ore is blasted and processed for the steel industry by newly perfected grinding, separating and agglomerating operations.

Soon it may be possible to extract highly diffused or diluted materials from the earth, from a wide variety of gaseous waste products, and from the sea. Some of our most valuable metals are actually fairly common, but they exist in highly diffused or trace amounts. Hardly a patch of soil or a common rock exists that does not contain traces of gold, larger quantities of uranium, and even larger amounts of other industrially useful elements such as

magnesium, zinc, copper and sulphur. About five percent of the earth's crust is made of iron. How can we extract these resources? The problem has been solved, in principle at least, by the analytical techniques chemists use to detect these elements. As the chemist Jacob Rosin argues, if an element can be detected in the laboratory, there is reason to hope that it can be extracted on a sufficiently large scale to be used by industry.

For more than half a century, most of the world's commercial nitrogen has been extracted from the atmosphere. Magnesium, chlorine, bromine and caustic soda are acquired from sea water and sulphur from calcium sulphate and industrial wastes. Large amounts of industrially useful hydrogen could be collected as a byproduct of the electrolysis of brine, but normally it is burned or released in the air by chlorine-producing plants. Carbon could be rescued in enormous quantities from smoke and used economically (carbon is comparatively rare in nature) but is dissipated together with other gaseous compounds in the atmosphere.

The problem industrial chemists face in extracting valuable elements and compounds from the sea and ordinary rock is the cost of the energy needed. Two methods exist—ion exchange and chromatography—and, if further perfected for industrial uses, they could be used to select or separate the desired substances from solutions, but the amount of energy needed to use these methods would be very costly in terms of real wealth. Unless there is an unexpected breakthrough in extractive techniques, there is little likelihood that conventional sources of energy—fossil fuels like coal and oil—will be used to solve the problem.

It is not that we lack energy *per se*, but we are just beginning to learn how to use sources that are available in almost limitless quantity. The gross radiant energy striking the earth's surface from the sun is estimated to be more than three thousand times the annual energy consumption

of mankind today. Although a portion of this energy is converted into wind or used for photosynthesis by vegetation, a staggering quantity is available for other uses. The problem is how to collect it to satisfy a portion of our energy needs. If solar energy could be collected for house heating, for example, twenty to thirty percent of the conventional energy resources we normally employ could be redirected to other purposes. If we could collect solar energy for all or most of our cooking, water heating, smelting and power production, we would have relatively little need for fossil fuels. Solar devices have been designed for nearly all of these functions. We can heat houses, cook food, boil water, melt metals and produce electricity with devices that use the sun's energy exclusively, but we can't do it efficiently in every latitude of the earth, and we are still confronted with a number of technical problems that can be solved only by crash research programs.

At this writing, quite a few houses have been built that are effectively heated by solar energy. In the United States, the best known of these are the MIT experimental buildings in Massachusetts, the Lof house in Denver, and the Thomason homes in Washington, D.C. Thomason, whose fuel cost for a solar-heated house barely reaches \$5 a year, seems to have developed one of the most practical systems at hand. Solar heat in a Thomason home is collected from the roof and transferred by circulating water to a storage tank in the basement. (The water, incidentally, can also be used for cooling the house and as an emergency supply for fire and drinking.) The system is simple and fairly cheap. Located in Washington near the fortieth parallel of latitude, the Thomason houses stand at the edge of the "solar belt"—the latitudes from zero to forty degrees north and south. This belt is the geographic area where the sun's rays can be used most effectively for domestic and industrial energy. With efficient solar heating, Thomason requires a minuscule amount of supple-

mental conventional fuel to heat his Washington homes.

Two approaches to solar house-heating are possible in cooler areas: heating systems could be more elaborate, which would reduce the consumption of conventional fuel to levels approximating those of the Thomason homes; or simple conventional fuel systems could be used to satisfy anywhere from ten to fifty percent of the heating needs. As Hans Thirring observes (with an eye toward cost and effort):

The decisive advantage of solar heating lies in the fact that no running costs arise, except the electricity bill for driving the fans, which is very small. Thus the one single investment for the installation pays once and for all the heating costs for the lifetime of the house. In addition, the system works automatically without smoke, soot, and fume production, and saves all trouble in stoking, refuelling, cleaning, repair and other work. Adding solar heat to the energy system of a country helps to increase the wealth of the nation, and if all houses in areas with favorable conditions were equipped with solar heating systems, fuel saving worth millions of pounds yearly could be achieved. The work of Telkes, Hottel, Lof, Bliss, and other scientists who are paving the way for solar heating is real pioneer work, the full significance of which will emerge more clearly in the future.<sup>20</sup>

The most widespread applications of solar energy devices are in cooking and water heating. Many thousands of solar stoves are used in underdeveloped countries, in Japan, and in the warm latitudes of the United States. A solar stove is simply an umbrella-like reflector equipped with a grill that can broil meat or boil a quart of water within fifteen minutes in bright sunlight. Such a stove is safe, portable

and clean; it requires no fuel or matches, nor does it produce any annoying smoke. A portable solar oven delivers temperatures as high as four hundred fifty degrees and is even more compact and easier to handle than a solar stove. Solar water-heaters are used widely in private homes, apartment buildings, laundries and swimming pools. Some twenty-five thousand of these units are employed in Florida and they are gradually coming into vogue in California.

Some of the most impressive advances in the use of solar energy have occurred in industry, although the majority of these applications are marginal at best and largely experimental in nature. The simplest is the solar furnace. The collector is usually a single large parabolic mirror, or, more likely, a huge array of many parabolic mirrors mounted in a large housing. A heliostat—a smaller, horizontally mounted mirror that follows the movement of the sun—reflects the rays into the collector. Several hundred of these furnaces are currently in use. One of the largest, Dr. Felix Trombe's Mont Louis furnace, develops seventy-five kilowatts of electric power and is used primarily in high-temperature research. Since the sun's rays do not contain any impurities, the furnace will melt a hundred pounds of metal without the contamination produced by conventional techniques. A solar furnace built by the U.S. Quartermaster Corps at Natick, Massachusetts, develops five thousand degrees Centigrade—a temperature high enough to melt steel I-beams.

Solar furnaces have many limitations, but these are not insurmountable. The efficiency of the furnaces can be appreciably reduced by haze, fog, clouds and atmospheric dust, and also by heavy wind loadings which deflect equipment and interfere with the accurate focusing of the sun's rays. Attempts are being made to resolve some of these problems by sliding roofs, covering material for the mirrors, and firm, protective housings. On the other hand,

solar furnaces are clean, they are efficient when they are in good working order, and they produce extremely high-grade metals which none of the conventional furnaces currently in use can match.

Equally promising as an area of research are current attempts to convert solar energy into electricity. Theoretically, an area roughly a square yard in size placed perpendicular to the sun's rays receives energy equivalent to one kilowatt. "Considering that in the arid zones of the world many millions of square meters of desert land are free for power production," observes Thirring, "we find that by utilizing only one percent of the available ground for solar plants a capacity could be reached far higher than the present installed capacity of all fuel-operated and hydroelectric power plants in the world."<sup>21</sup> In practice, work along the lines suggested by Thirring has been inhibited by cost considerations, by market factors (there is no large demand for electricity in those underdeveloped, hot areas of the world where the project is most feasible) and by essentially the conservatism of designers in the power field. Research emphasis has been placed on the development of solar batteries—a result largely of work on the "space program."

Solar batteries are based on the thermoelectric effect. If strips of antimony and bismuth are joined in a loop, for example, a temperature differential made, say, by producing heat in one junction, yields electric power. Research on solar batteries over the past decade or so resulted in devices that have a power-converting efficiency as high as fifteen percent, and twenty to twenty-five percent is quite attainable in the not too distant future.\* Grouped in large panels, solar batteries have been used to power electric cars, small boats, telephone lines, radios, phonographs, clocks, sewing machines and other appliances. Eventually,

\* The efficiency of the gasoline engine is rated at around eleven percent, to cite a comparison.

the cost of producing solar batteries is expected to diminish to a point where they will provide electric power for homes and even small industrial facilities.

Finally, the sun's energy can be used in still another way—by collecting heat in a body of water. For some time now, engineers have been studying ways of acquiring electric power from the temperature differences produced by the sun's heat in the sea. Theoretically, a solar pond occupying a square kilometer could yield thirty million kilowatt-hours of electricity annually—enough to match the output of a sizeable power station operating more than twelve hours every day of the year. The power, as Henry Tabor observes, can be acquired without any fuel costs, "merely by the pond lying in the sun."<sup>22</sup> Heat can be extracted from the bottom of the pond by passing the hot water over a heat exchanger and then returning the water to the pond. In warm latitudes, ten thousand square miles committed to this method of power production would provide enough electricity to satisfy the needs of four hundred million people!

The ocean's tides are still another untapped resource to which we could turn for electric power. We could trap the ocean's waters at high tide in a natural basin—say a bay or the mouth of a river—and release them through turbines at low tide. A number of places exist where the tides are high enough to produce electric power in large quantities. The French have already built an immense tidal-power installation near the mouth of the Rance River at St. Malo with an expected net yield of 544 million kilowatt-hours annually. They also plan to build another dam in the bay of Mont-Saint-Michel. In England, highly suitable conditions for a tidal dam exist above the confluence of the Severn and Wye rivers. A dam here could provide the electric power produced by a million tons of coal annually. A superb location for producing tide-generated electricity exists at Passamaquoddy Bay on the border between Maine

and New Brunswick, and good locales exist on the Mezen Gulf, a Russian coastal area in the Arctic. Argentina has plans for building a tidal dam across the estuary of the Deseado River near Puerto Desire on the Atlantic coast. Many other coastal areas could be used to generate electricity from tidal power, but except for France no country has started work on this resource.

We could use temperature differences in the sea or in the earth to generate electric power in sizeable quantities. A temperature differential as high as seventeen degrees Centigrade is not uncommon in the surface layers of tropical waters; along coastal areas of Siberia, winter differences of thirty degrees exist between water below the ice crust and the air. The interior of the earth becomes progressively warmer as we descend, providing selective temperature differentials with respect to the surface. Heat pumps could be used to avail ourselves of these differentials for industrial purposes or to heat homes. The heat pump works like a mechanical refrigerator: a circulating refrigerant draws off heat from a medium, dissipates it, and returns to repeat the process. During winter months, the pumps, circulating a refrigerant in a shallow well, could be used to absorb subsurface heat and release it in a house. In the summer the process could be reversed: heat withdrawn from the house could be dissipated in the earth. The pumps do not require costly chimneys, they do not pollute the atmosphere, and they eliminate the nuisance of stoking furnaces and carrying out ashes. If we could acquire electricity or direct heat from solar energy, wind power or temperature differentials, the heating system of a home or factory would be completely self-sustaining; it would not drain valuable hydrocarbon resources or require external sources of supply.

Winds could also be used to provide electric power in many areas of the world. About one-fortieth of the solar energy reaching the earth's surface is converted into wind.

Although much of this goes into making the jet stream, a great deal of wind energy is available a few hundred feet above the ground. A UN report, using monetary terms to gauge the feasibility of wind power, finds that efficient wind plants in many areas could produce electricity at an overall cost of five mills per kilowatt-hour, a figure that approximates the price of commercially generated electric power. Several wind generators have already been used with success. The famous 1,250 kilowatt generator at Grandpa's Knob near Rutland, Vermont, successfully fed alternating current into the lines of the Central Vermont Public Service Co. until a parts shortage during World War II made it difficult to keep the installation in good repair. Since then, larger, more efficient generators have been designed. P. H. Thomas, working for the Federal Power Commission, has designed a 7,500 kilowatt windmill that would provide electricity at a capital investment of \$68 per kilowatt. Eugene Ayres notes that if the construction costs of Thomas's windmill were double the amount estimated by its designer, "wind turbines would seem nevertheless to compare favorably with hydroelectric installations which cost around \$300 per kilowatt."<sup>23</sup> An enormous potential for generating electricity by means of wind power exists in many regions of the world. In England, for example, where a careful three-year survey was made of possible wind-power sites, it was found that the newer wind turbines could generate several million kilowatts, saving from two to four million tons of coal annually.

There should be no illusions about the extraction of trace minerals from rocks, about solar and wind power, or about the use of heat pumps. Except perhaps for tidal power and the extraction of raw materials from the sea, these sources cannot supply man with the bulky quantities of raw materials and the large blocks of energy needed to sustain densely concentrated populations and highly cen-

tralized industries. Solar devices, wind turbines, and heat pumps will produce relatively small quantities of power. Used locally and in conjunction with each other, they could probably meet all the power needs of small communities, but we cannot foresee a time when they will be able to furnish the electricity currently used by cities the size of New York, London or Paris.

Limitation of scope, however, could represent a profound advantage from an ecological point of view. The sun, the wind and the earth are experiential realities to which men have responded sensuously and reverently from time immemorial. Out of these primal elements man developed his sense of dependence on—and respect for—the natural environment, a dependence that kept his destructive activities in check. The Industrial Revolution and the urbanized world that followed obscured nature's role in human experience—hiding the sun with a pall of smoke, blocking the winds with massive buildings, desecrating the earth with sprawling cities. Man's dependence on the natural world became invisible; it became theoretical and intellectual in character, the subject matter of textbooks, monographs and lectures. True, this theoretical dependence supplied us with insights (partial ones at best) into the natural world, but its onesidedness robbed us of all sensuous dependence on and all visible contact and unity with nature. In losing these, we lost a part of ourselves as feeling beings. We became alienated from nature. Our technology and environment became totally inanimate, totally synthetic—a purely inorganic physical milieu that promoted the deanimization of man and his thought.

To bring the sun, the wind, the earth, indeed the world of life, back into technology, into the means of human survival, would be a revolutionary renewal of man's ties to nature. To restore this dependence in a way that evoked a sense of regional uniqueness in each community—a sense not only of generalized dependence but of dependence on

a specific region with distinct qualities of its own—would give this renewal a truly ecological character. A real ecological system would emerge, a delicately interlaced pattern of local resources, honored by continual study and artful modification. With the growth of a true sense of regionalism every resource would find its place in a natural, stable balance, an organic unity of social, technological and natural elements. Art would assimilate technology by becoming social art, the art of the community as a whole. The free community would be able to rescale the tempo of life, the work patterns of man, its own architecture and its systems of transportation and communication to human dimensions. The electric car, quiet, slow-moving and clean, would become the preferred mode of urban transportation, replacing the noisy, filthy, high-speed automobile. Monorails would link community to community, reducing the number of highways that scar the countryside. Crafts would regain their honored position as supplements to mass manufacture; they would become a form of domestic, day-to-day artistry. A high standard of excellence, I believe, would replace the strictly quantitative criteria of production that prevail today; a respect for the durability of goods and the conservation of raw materials would replace the shabby, huckster-oriented criteria that result in built-in obsolescence and an insensate consumer society. The community would become a beautifully molded arena of life, a vitalizing source of culture and a deeply personal, ever-nourishing source of human solidarity.

#### *TECHNOLOGY FOR LIFE*

In a future revolution, the most pressing task of technology will be to produce a surfeit of goods with a minimum of toil. The immediate purpose of this task will be to open the social arena permanently to the revolutionary people, *to keep the revolution in permanence*. Thus far

every social revolution has foundered because the peal of the tocsin could not be heard over the din of the workshop. Dreams of freedom and plenty were polluted by the mundane, workaday responsibility of producing the means of survival. Looking back at the brute facts of history, we find that as long as revolution meant continual sacrifice and denial for the people, the reins of power fell into the hands of the political "professionals," the mediocrities of Thermidor. How well the liberal Girondins of the French Convention understood this reality can be judged by their effort to reduce the revolutionary fervor of the Parisian popular assemblies—the great sections of 1793—by decreeing that the meetings should close "at ten in the evening," or, as Carlyle tells us, "before the working people come. . ." from their jobs.<sup>24</sup> The decree proved ineffective, but it was well aimed. Essentially, the tragedy of past revolutions has been that, sooner or later, their doors closed, "at ten in the evening." *The most critical function of modern technology must be to keep the doors of the revolution open forever!*

Nearly a half century ago, while Social-Democratic and Communist theoreticians babbled about a society with "work for all," the Dadaists, those magnificent madmen, demanded unemployment for everybody. The decades have detracted nothing from the significance of this demand, and they have added to its content. From the moment toil is reduced to the barest possible minimum or disappears entirely, the problems of survival pass into the problems of life, and technology itself passes from being the servant of man's immediate needs to being the partner of his creativity.

Let us look at this matter closely. Much has been written about technology as an "extension of man." The phrase is misleading if it is meant to apply to technology as a whole. It has validity primarily for the traditional handi-craft shop and, perhaps, for the early stages of machine

development. The craftsman dominates his tool; his labor, artistic inclinations, and personality are the sovereign factors in the productive process. Labor is not merely an expenditure of energy; it is also the personalized work of a man whose activities are sensuously directed toward preparing his product, fashioning it, and finally decorating it for human use. The craftsman guides the tool, not the tool the craftsman. Whatever alienation may exist between the craftsman and his product is immediately overcome, as Friedrich Wilhelmsen emphasized, "by an artistic judgment—a judgment bearing on a thing to be made."<sup>25</sup> The tool amplifies the powers of the craftsman as a *human*; it amplifies his power to exercise his artistry and impart his identity as a creative being to raw materials.

The development of the machine tends to rupture the intimate relationship between man and the means of production. It assimilates the worker to preset industrial tasks, tasks over which he exercises no control. The machine now appears as an alien force—apart from and yet wedded to the production of the means of survival. Although initially an "extension of man," technology is transformed into a force above man, orchestrating his life according to a score contrived by an industrial bureaucracy; not *men*, I repeat, but a *bureaucracy*, a *social machine*. With the arrival of mass production as the predominant mode of production, man became an extension of the machine, and not only of mechanical devices in the productive process but also of social devices in the social process. When he becomes an extension of a machine, man ceases to exist for his own sake. Society is ruled by the harsh maxim: "production for the sake of production." The decline from craftsman to worker, from an active to an increasingly passive personality, is completed by man *qua* consumer—an economic entity whose tastes, values, thoughts and sensibilities are engineered by bureaucratic "teams" in "think tanks." Man, standardized by machines, is reduced to a machine.

Man-the-machine is the bureaucratic ideal.\* It is an ideal that is continually defied by the rebirth of life, by the reappearance of the young, and by the contradictions that unsettle the bureaucracy. Every generation has to be assimilated again, and each time with explosive resistance. The bureaucracy, in turn, never lives up to its own technical ideal. Congested with mediocrities, it errs continually. Its judgment lags behind new situations; insensate, it suffers from social inertia and is always buffeted by chance. Any crack that opens in the social machine is widened by the forces of life.

How can we heal the fracture that separates living men from dead machines without sacrificing either men or machines? How can we transform a technology for survival into a technology for life? To answer any of these questions with Olympian assurance would be idiotic. The future liberated men will choose from a large variety of mutually exclusive or combinable work styles, all of which will be based on unforeseeable technological innovations. Or these humans of the future may simply choose to step over the body of technology. They may submerge the cybernated machine in a technological underworld, divorcing it entirely from social life, the community and creativity. All but hidden from society, the machines would work for man. Free communities would stand at the end of a cybernated assembly line with baskets to cart the goods home. Industry, like the autonomic nervous system, would work on its own, subject to the repairs that our own

\* The "ideal man" of the police bureaucracy is a being whose innermost thoughts can be invaded by lie detectors, electronic listening devices, and "truth" drugs. The "ideal man" of the political bureaucracy is a being whose innermost life can be shaped by mutagenic chemicals and socially assimilated by the mass media. The "ideal man" of the industrial bureaucracy is a being whose innermost life can be invaded by subliminal and predictively reliable advertising. The "ideal man" of the military bureaucracy is a being whose innermost life can be invaded by regimentation for genocide.

bodies require in occasional bouts of illness. The fracture separating man from machine would not be healed. It would simply be ignored.

Ignoring technology, of course, is no solution. Man would be closing off a vital human experience—the stimulus of productive activity, the stimulus of the machine. Technology can play a vital role in forming the personality of man. Every art, as Lewis Mumford has argued, has its technical side, requiring the self-mobilization of spontaneity into expressed order and providing contact with the objective world during the most ecstatic moments of experience.

A liberated society, I believe, will not want to negate technology precisely because it is liberated and can strike a balance. It may well want to assimilate the machine to artistic craftsmanship. By this I mean the machine will remove the toil from the productive process, leaving its artistic completion to man. The machine, in effect, will participate in human creativity. There is no reason why automatic, cybernated machinery cannot be used so that the finishing of products, especially those destined for personal use, is left to the community. The machine can absorb the toil involved in mining, smelting, transporting and shaping raw materials, leaving the final stages of artistry and craftsmanship to the individual. Most of the stones that make up a medieval cathedral were carefully squared and standardized to facilitate their laying and bonding—a thankless, repetitive and boring task that can now be done rapidly and effortlessly by modern machines. Once the stone blocks were set in place, the craftsmen made their appearance; toil was replaced by creative human work. In a liberated community the combination of industrial machines and the craftsman's tools could reach a degree of sophistication and of creative interdependence unparalleled in any period in human history. William Morris's vision of a return to craftsmanship would be freed of

its nostalgic nuances. We could truly speak of a qualitatively new advance in technics—a technology for life.

Having acquired a vitalizing respect for the natural environment and its resources, the free decentralized community would give a new interpretation to the word "need." Marx's "realm of necessity," instead of expanding indefinitely, would tend to contract; needs would be humanized and scaled by a higher valuation of life and creativity. Quality and artistry would supplant the current emphasis on quantity and standardization; durability would replace the current emphasis on expendability; an economy of cherished things, sanctified by a sense of tradition and by a sense of wonder for the personality and artistry of dead generations, would replace the mindless seasonal restyling of commodities; innovations would be made with a sensitivity for the natural inclinations of man as distinguished from the engineered pollution of taste by the mass media. Conservation would replace waste in all things. Freed of bureaucratic manipulation, men would rediscover the beauty of a simpler, uncluttered material life. Clothing, diet, furnishings and homes would become more artistic, more personalized and more Spartan. Man would recover a sense of the things that are *for* man, as against the things that have been imposed upon man. The repulsive ritual of bargaining and hoarding would be replaced by the sensitive acts of making and giving. Things would cease to be the crutches for an impoverished ego and the mediators between aborted personalities; they would become the products of rounded, creative individuals and the gifts of integrated, developing selves.

A technology for life could play the vital role of integrating one community with another. Rescaled to a revival of crafts and a new conception of material needs, technology could also function as the sinews of confederation. A national division of labor and industrial centralization are dangerous because technology begins to transcend the

human scale; it becomes increasingly incomprehensible and lends itself to bureaucratic manipulation. To the extent that a shift away from community control occurs in real material terms (technologically and economically), centralized institutions acquire real power over the lives of men and threaten to become sources of coercion. A technology for life must be *based* on the community; it must be tailored to the community and the regional level. On this level, however, the sharing of factories and resources could actually promote solidarity between community groups; it could serve to confederate them on the basis not only of common spiritual and cultural interests but also of common material needs. Depending upon the resources and uniqueness of regions, a rational, humanistic balance could be struck between autarky, industrial confederation, and a national division of labor.

Is society so "complex" that an advanced industrial civilization stands in contradiction to a decentralized technology for life? My answer to this question is a categorical *no*. Much of the social "complexity" of our time originates in the paperwork, administration, manipulation and constant wastefulness of capitalist enterprise. The petty bourgeois stands in awe of the bourgeois filing system—the rows of cabinets filled with invoices, accounting books, insurance records, tax forms and the inevitable dossiers. He is spellbound by the "expertise" of industrial managers, engineers, stylemongers, financial manipulators, and the architects of market consent. He is totally mystified by the state—the police, courts, jails, federal offices, secretariats, the whole stinking, sick body of coercion, control and domination. Modern society is incredibly complex, complex even beyond human comprehension, if we grant its premises—property, "production for the sake of production," competition, capital accumulation, exploitation, finance, centralization, coercion, bureaucracy and the domination of man by man. Linked to every one of these

premises are the institutions that actualize it—offices, millions of "personnel," forms, immense tons of paper, desks, typewriters, telephones, and, of course, rows upon rows of filing cabinets. As in Kafka's novels, these things are real but strangely dreamlike, indefinable shadows on the social landscape. The economy has a greater reality to it and is easily mastered by the mind and senses, but it too is highly intricate—if we grant that buttons must be styled in a thousand different forms, textiles varied endlessly in kind and pattern to create the illusion of innovation and novelty, bathrooms filled to overflowing with a dazzling variety of pharmaceuticals and lotions, and kitchens cluttered with an endless number of imbecile appliances. If we single out of this odious garbage one or two goods of high quality in the more useful categories and if we eliminate the money economy, the state power, the credit system, the paperwork and the policework required to hold society in an enforced state of want, insecurity and domination, society would not only become reasonably human but also fairly simple.

I do not wish to belittle the fact that behind a single yard of high quality electric wiring lies a copper mine, the machinery needed to operate it, a plant for producing insulating material, a copper smelting and shaping complex, a transportation system for distributing the wiring—and behind each of these complexes other mines, plants, machine shops and so forth. Copper mines, certainly of a kind that can be exploited by existing machinery, are not to be found everywhere, although enough copper and other useful metals can be recovered as scrap from the debris of our present society to provide future generations with all they need. But let us grant that copper will fall within the sizeable category of material that can be furnished only by a nationwide system of distribution. In what sense need there be a division of labor in the current sense of the term? There need be none at all. First, copper

can be distributed, together with other goods, among free, autonomous communities, be they those that mine it or those that require it. This distribution system need not require the mediation of centralized bureaucratic institutions. Second, and perhaps more significant, a community that lives in a region with ample copper resources would not be a mere mining community. Copper mining would be one of the many economic activities in which it was engaged—a part of a larger, rounded, organic economic arena. The same would hold for communities whose climate was most suitable for growing specialized foods or whose resources were rare and uniquely valuable to society as a whole. Every community would approximate local or regional autarky. It would seek to achieve wholeness, because wholeness produces complete, rounded men who live in symbiotic relationship with their environment. Even if a substantial portion of the economy fell within the sphere of a national division of labor, the overall economic weight of society would still rest with the community. If there is no distortion of communities, there will be no sacrifice of any portion of humanity to the interests of humanity as a whole.

A basic sense of decency, sympathy and mutual aid lies at the core of human behavior. Even in this lousy bourgeois society we do not find it unusual that adults will rescue children from danger although the act may imperil their lives; we do not find it strange that miners, for example, will risk death to save their fellow workers in caves or that soldiers will crawl under heavy fire to carry a wounded comrade to safety. What tends to shock us are those occasions when aid is refused—when the cries of a girl who has been stabbed and is being murdered are ignored in a middle-class neighborhood.

Yet there is nothing in this society that would seem to warrant a molecule of solidarity. What solidarity we do find exists despite the society, against all its realities, as an

unending struggle between the innate decency of man and the innate indecency of society. Can we imagine how men would behave if this decency could find full release, if society earned the respect, even the love, of the individual? We are still the offspring of a violent, blood-soaked, ignoble history—the end products of man's domination of man. We may never end this condition of domination. The future may bring us and our shoddy civilization down in a Wagnerian *Gotterdamerung*. How idiotic it would all be! But we may also end the domination of man by man. We may finally succeed in breaking the chain to the past and gain a humanistic, anarchist society. Would it not be the height of absurdity, indeed of impudence, to gauge the behavior of future generations by the very criteria we despise in our own time? Free men will not be greedy, one liberated community will not try to dominate another because it has a potential monopoly of copper, computer "experts" will not try to enslave grease monkeys, and sentimental novels about pining, tubercular virgins will not be written. We can ask only one thing of the free men and women of the future: to forgive us that it took so long and that it was such a hard pull. Like Brecht, we can ask that they try not to think of us too harshly, that they give us their sympathy and understand that we lived in the depths of a social hell.

But then, they will surely know what to think without our telling them.

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# The Forms of Freedom

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Freedom has its forms. However personalized, individuated or dadaesque may be the attack upon prevailing institutions, a liberatory revolution always poses the question of what social forms will replace existing ones. At one point or another, a revolutionary people must deal with how it will manage the land and the factories from which it acquires the means of life. It must deal with the manner in which it will arrive at decisions that affect the community as a whole. Thus if revolutionary thought is to be taken at all seriously, it must speak directly to the problems and forms of social management. It must open to public discussion the problems that are involved in a creative development of liberatory social forms. Although there is no theory of liberation that can replace experience, there is sufficient historical experience, and a sufficient theoretical formulation of the issues involved, to indicate what social forms are consistent with the fullest realization of personal and social freedom.

What social forms will replace existing ones depends on what relations free people decide to establish between themselves. Every personal relationship has a social dimension; every social relationship has a deeply personal side to it. Ordinarily, these two aspects and their relationship to each other are mystified and difficult to see clearly. The institutions created by hierarchical society, especially the state institutions, produce the illusion that social relations exist in a universe of their own, in specialized political or bureaucratic compartments. In reality, there exists no strictly "impersonal" political or social dimension; all the social institutions of the past and present depend on the relations between people in daily life, especially in those

aspects of daily life which are necessary for survival—the production and distribution of the means of life, the rearing of the young, the maintenance and reproduction of life. The liberation of man—not in some vague "historical," moral, or philosophical sense, but in the intimate details of day-to-day life—is a profoundly social act and raises the problem of social forms as modes of relations between individuals.

The relationship between the social and the individual requires special emphasis in our own time, for never before have personal relations become so impersonal and never before have social relations become so asocial. Bourgeois society has brought all relations between people to the highest point of abstraction by divesting them of their *human* content and dealing with them as *objects*. The object—the commodity—takes on roles that formerly belonged to the community; exchange relationships (actualized in most cases as money relationships) supplant nearly all other modes of human relationships. In this respect, the bourgeois commodity system becomes the historical culmination of all societies, precapitalist as well as capitalist, in which human relationships are *mediated* rather than direct or face-to-face.

#### *THE MEDIATION OF SOCIAL RELATIONS*

To place this development in clearer perspective, let us briefly look back in time and establish what the mediation of social relations has come to mean.

The earliest social "specialists" who interposed themselves between people—the priests and tribal chiefs who permanently mediated their relations—established the *formal* conditions for hierarchy and exploitation. These formal conditions were consolidated and deepened by technological advances—advances which provided only enough material surplus for the few to live at the expense of the many. The tribal assembly, in which all members of

the community had decided and directly managed their common affairs, dissolved into chieftainship, and the community dissolved into social classes.

Despite the increasing investiture of social control in a handful of men and even one man, the fact remains that men in precapitalist societies mediated the relations of other people—council supplanting assembly, and chieftainship supplanted council. In bourgeois society, on the other hand, the mediation of social relations by men is replaced by the mediation of social relations by *things*, by commodities. Having brought social mediation to the highest point of impersonality, commodity society turns attention to mediation as such; it brings into question *all* forms of social organization based on indirect representation, on the management of public affairs by the few, on the distinctive existence of concepts and practices such as "election," "legislation," "administration."

The most striking evidence of this social refocusing are the demands voiced almost intuitively by increasing numbers of American youth for tribalism and community. These demands are "regressive" only in the sense that they go back *temporally* to pre-hierarchical forms of freedom. They are profoundly progressive in the sense that they go back *structurally* to *non*-hierarchical forms of freedom.

By contrast, the traditional revolutionary demand for *council* forms of organization (what Hannah Arendt describes as "the revolutionary heritage") does not break completely with the terrain of hierarchical society. *Workers'* councils originate as *class* councils. Unless one assumes that workers are driven by their interests *as workers* to revolutionary measures against hierarchical society (an assumption I flatly deny), then these councils can be used just as much to perpetuate class society as to destroy it.\* We shall see, in fact, that the council form

\* For a discussion on the myth of the **working** class see "Listen, Marxist!"

contains many structural limitations which favor the development of hierarchy. For the present, it suffices to say that most advocates of workers' councils tend to conceive of people primarily as economic entities, either as workers or nonworkers. This conception leaves the onesidedness of the self completely intact. Man is viewed as a bifurcated being, the product of a social development that divides man from man and each man from himself.

Nor is this one-sided view completely corrected by demands for workers' management of production and the shortening of the work week, for these demands leave the *nature* of the work process and the *quality* of the worker's free time completely untouched. If workers' councils and workers' management of production do not transform the work into a joyful activity, free time into a marvelous experience, and the workplace into a community, then they remain merely formal structures, in fact, *class* structures. They perpetuate the limitations of the proletariat as a product of bourgeois social conditions. Indeed, no movement that raises the demand for workers' councils can be regarded as revolutionary unless it tries to promote sweeping transformations in the environment of the work place.

Finally, council organizations are forms of mediated relationships rather than face-to-face relationships. Unless these mediated relationships are limited by direct relationships, leaving policy decisions to the latter and mere administration to the former, the councils tend to become focuses of power. Indeed, unless the councils are finally assimilated by a popular assembly, and factories are integrated into new types of community, both the councils and the factories perpetuate the alienation between man and man and between man and work. Fundamentally, the degree of freedom in a society can be gauged by the kind of relationships that unite the people in it. If these relationships are open, unalienated and creative, the society will be free. If structures exist that inhibit open relation-

ships, either by coercion or mediation, then freedom will not exist, whether there is workers' management of production or not. For *all* the workers will manage will be production—the preconditions of life, not the conditions of life. No mode of social organization can be isolated from the social conditions it is organizing. Both councils and assemblies have furthered the interests of hierarchical society as well as those of revolution. To assume that the forms of freedom can be treated merely as forms would be as absurd as to assume that legal concepts can be treated merely as questions of jurisprudence. The form and content of freedom, like law and society, are mutually determined. By the same token, there are forms of organization that promote and forms that vitiate the goal of freedom, and social conditions favor sometimes the one and sometimes the other. To one degree or another, these forms either alter the individual who uses them or inhibit his further development.

This article does not dispute the need for workers' councils—more properly, *factory committees*—as a revolutionary means of appropriating the bourgeois economy. On the contrary, experience has shown repeatedly that the factory committee is vitally important as an initial form of economic administration. But no revolution can settle for councils and committees as its final, or even its exemplary, mode of social organization, any more than "workers' management of production" can be regarded as a final mode of economic administration. Neither of these two relationships is *broad* enough to revolutionize work, free time, needs, and the structure of society as a whole. In this article I take the revolutionary aspect of the council and committee forms for granted; my purpose is to examine the conservative traits in them which vitiate the revolutionary project.

It has always been fashionable to look for models of social

institutions in the so called "proletarian" revolutions of the past hundred years. The Paris Commune of 1871, the Russian Soviets of 1905 and 1917, the Spanish revolutionary syndicates of the 1930s, and the Hungarian councils of 1956 have all been raked over for examples of future social organization. What, it is worth asking, do these models of organization have in common? The answer is, very little, other than their limitations as mediated forms. Spain, as we shall see, provides a welcome exception: the others were either too short-lived or simply too distorted to supply us with more than the material for myths.

The Paris Commune may be revered for many different reasons—for its intoxicating sense of libidinal release, for its radical populism, for its deeply revolutionary impact on the oppressed, or for its defiant heroism in defeat. But the Commune itself, viewed as a *structural* entity, was little more than a popular municipal council. More democratic and plebeian than other such bodies, the council was nevertheless structured along parliamentary lines. It was elected by "citizens," grouped according to geographic constituencies. In combining legislation with administration, the Commune was hardly more advanced than the municipal bodies in the U.S. today.

Fortunately, revolutionary Paris largely ignored the Commune after it was installed. The insurrection, the actual management of the city's affairs, and finally the fighting against the Versaillese, were undertaken mainly by the popular clubs, the neighborhood vigilance committees, and the battalions of the National Guard. Had the Paris Commune (the Municipal Council) survived, it is extremely doubtful that it could have avoided conflict with these loosely formed street and militia formations. Indeed, by the end of April, some six weeks after the insurrection, the Commune constituted an "all-powerful" Committee of Public Safety, a body redolent with memories of the

Jacobin dictatorship and the Terror, which suppressed not only the right in the Great Revolution of a century earlier, but also the left. In any case, history left the Commune a mere three weeks of life, two of which were consumed in the death throes of barricade fighting against Thiers and the Versaillese.

It does not malign the Paris Commune to divest it of "historical" burdens it never actually carried. The Commune was a festival of the streets, its partisans primarily handicraftsmen, itinerant intellectuals, the social debris of a precapitalist era, and lumpens. To regard these strata as "proletarian" is to caricature the word to the point of absurdity. The industrial proletariat constituted a minority of the Communards.\*

The Commune was the last great rebellion of the French *sans-culottes*, a class that lingered on in Paris for a century after the Great Revolution. Ultimately, this highly mixed stratum was destroyed not by the guns of the Versaillese but by the advance of industrialism.

The Paris Commune of 1871 was largely a city council, established to coordinate municipal administration under conditions of revolutionary unrest. The Russian Soviets of

\* If we are to regard the bulk of the Communards as "proletarians," or describe any social stratum as "proletarian" (as the French Situationists do) simply because it has no control over the conditions of its life, we might just as well call slaves, serfs, peasants and large sections of the middle class "proletarians." To create such sweeping antitheses between "proletarian" and bourgeois, however, eliminates all the determinations that characterize these classes as specific, historically limited strata. This giddy approach to social analysis divests the industrial proletariat and the bourgeoisie of all the historically unique features which Marx believed he had discovered (a theoretical project that proved inadequate, although by no means false); it slithers away from the responsibilities of a serious critique of Marxism and the development of "laissez-faire" capitalism toward state capitalism, while pretending to retain continuity with the Marxian project.

1905 were largely fighting organizations, established to coordinate near-insurrectionary strikes in St. Petersburg. These councils were based almost entirely on factories and trade unions: there was a delegate for every five hundred workers (where individual factories and shops contained a smaller number, they were grouped together for voting purposes), and additionally, delegates from trade unions and political parties. The soviet mode of organization took on its clearest and most stable form in St. Petersburg, where the soviet contained about four hundred delegates at its high point, including representatives of the newly organized professional unions. The St. Petersburg soviet rapidly developed from a large strike committee into a parliament of all oppressed classes, broadening its representation, demands and responsibilities. Delegates were admitted from cities outside St. Petersburg, political demands began to dominate economic ones, and links were established with peasant organizations and their delegates admitted into the deliberations of the body. Inspired by St. Petersburg, Soviets sprang up in all the major cities and towns of Russia and developed into an incipient revolutionary power counterposed to all the governmental institutions of the autocracy.

The St. Petersburg soviet lasted less than two months. Most of its members were arrested in December 1905. To a large extent, the soviet was deserted by the St. Petersburg proletariat, which never rose in armed insurrection and whose strikes diminished in size and militancy as trade revived in the late autumn. Ironically, the last stratum to advance beyond the early militancy of the soviet were the Moscow students, who rose in insurrection on December 22 and during five days of brilliantly conceived urban guerrilla warfare reduced local police and military forces to near impotence. The students received very little aid from the workers in the city. Their street battles might have continued indefinitely, even in the face of massive prole-

tarian apathy, had the czar's guard not been transported to Moscow by the railway workers on one of the few operating lines to the city.

The Soviets of 1917 were the true heirs of the Soviets of 1905, and to distinguish the two from each other, as some writers occasionally do, is spurious. Like their predecessors of twelve years earlier, the 1917 Soviets were based largely on factories, trade unions and party organizations, but they were expanded to include delegates from army groups and a sizeable number of stray radical intellectuals. The Soviets of 1917 reveal all the limitations of "sovietism." Though the Soviets were invaluable as *local*/fighting organizations, their *national* congresses proved to be increasingly unrepresentative bodies. The congresses were organized along very hierarchical lines. Local Soviets in cities, towns and villages elected delegates to district and regional bodies; these elected delegates to the actual nationwide congresses. In larger cities, representation to the congresses was less indirect, but it was indirect nonetheless—from the voter in a large city to the municipal soviet and from the municipal soviet to the congress. In either case the congress was separated from the mass of voters by one or more representative levels.

The soviet congresses were scheduled to meet every three months. This permitted far too long a time span to exist between sessions. The first congress, held in June 1917, had some eight hundred delegates; later congresses were even larger, numbering a thousand or more delegates. To "expedite" the work of the congresses and to provide continuity of function between the tri-monthly sessions, the congresses elected an executive committee, fixed at not more than two hundred in 1918 and expanded to a maximum of three hundred in 1920. This body was to remain more or less in permanent session, but it too was regarded as unwieldy and most of its responsibilities after the October revolution were turned over to a small Council

of People's Commissars. Having once acquired control of the Second Congress of Soviets (in October 1917), the Bolsheviks found it easy to centralize power in the Council of Commissars and later in the Political Bureau of the Communist Party. Opposition groups in the Soviets either left the Second Congress or were later expelled from all soviet organs. The tri-monthly meetings of the congresses were permitted to lapse: the completely Bolshevik Executive Committee and Council of People's Commissars simply did not summon them. Finally, the congresses were held only once a year. Similarly, the intervals between the meetings of district and regional Soviets grew increasingly longer and even the meetings of the Executive Committee, created by the congresses as a body in permanent session, became increasingly infrequent until finally they were held only three times a year. The power of the local Soviets passed into the hands of the Executive Committee, the power of the Executive Committee passed into the hands of the Council of People's Commissars, and finally, the power of the Council of People's Commissars passed into the hands of the Political Bureau of the Communist Party.

That the Russian Soviets were incapable of providing the anatomy for a truly popular democracy is to be ascribed not only to their hierarchical structure, but also to their limited social roots. The insurgent military battalions, from which the Soviets drew their original striking power, were highly unstable, especially after the final collapse of the czarist armies. The newly formed Red Army was recruited, disciplined, centralized and tightly controlled by the Bolsheviks. Except for partisan bands and naval forces, soviet military bodies remained politically inert throughout the civil war. The peasant villages turned inward toward their local concerns, and were apathetic about national problems. This left the factories as the most important political base of the Soviets. Here we encounter a basic contradiction in *class* concepts of revolutionary

power: proletarian socialism, precisely because it emphasizes that power must be based exclusively on the factory, creates the conditions for a centralized, hierarchical political structure.

However much its social position is strengthened by a system of "self-management," the factory is not an autonomous social organism. The amount of social control the factory can exercise is fairly limited, for every factory is highly dependent for its operation and its very existence upon other factories and sources of raw materials. Ironically, the Soviets, by basing themselves primarily in the factory and isolating the factory from its local environment, shifted power from the community and the region to the nation, and eventually from the base of society to its summit. The soviet system consisted of an elaborate skein of mediated social relationships, knitted along nationwide class lines.

Perhaps the only instance where a system of working-class self-management succeeded as a mode of *class* organization was in Spain, where anarcho-syndicalism attracted a large number of workers and peasants to its banner. The Spanish anarcho-syndicalists *consciously* sought to limit the tendency toward centralization. The CNT (Confederacion Nacional del Trabajo), the large anarcho-syndicalist union in Spain, created a dual organization with an elected committee system to act as a control on local bodies and national congresses. The assemblies had the power to revoke their delegates to the council and countermand council decisions. For all practical purposes the "higher" bodies of the CNT functioned as coordinating bodies. Let there be no mistake about the effectiveness of this scheme of organization: it imparted to each member of the CNT a weighty sense of responsibility, a sense of direct, immediate and personal influence in the activities and policies of the union. This responsibility was exercised with a highmindedness that made the CNT the most mili-

tant as well as the largest revolutionary movement in Europe during the interwar decades.

The Spanish Revolution of 1936 put the CNT system to a practical test, and it worked fairly well. In Barcelona, CNT workers seized the factories, transportation facilities and utilities, and managed them along anarcho-syndicalist lines. It remains a matter of record, attested to by visitors of almost every political persuasion, that the city's economy operated with remarkable success and efficiency—despite the systematic sabotage practiced by the bourgeois Republican government and the Spanish Communist Party. The experiment finally collapsed in shambles when the central government's assault troops occupied Barcelona in May 1937, following an uprising of the proletariat.

Despite their considerable influence, the Spanish anarchists had virtually no roots outside certain sections of the working class and peasantry. The movement was limited primarily to industrial Catalonia, the coastal Mediterranean areas, rural Aragon, and Andalusia. What destroyed the experiment was its isolation within Spain itself and the overwhelming forces—Republican as well as fascist, and Stalinist as well as bourgeois—that were mobilized against it.\*

It would be fruitless to examine in detail the council modes of organization that emerged in Germany in 1918, in the Asturias in 1934, and in Hungary in 1956. The German councils were hopelessly perverted: the so-called "majority" (reformist) social democrats succeeded in gaining control of the newly formed councils and using them for counterrevolutionary ends. In Hungary and Asturias

\* This is not to ignore the disastrous political errors made by many "leading" Spanish anarchists. Although the leading anarchists were faced with the alternative of establishing a dictatorship in Catalonia, which they were not prepared to do (and rightly so!), this was no excuse for practicing opportunistic tactics all along the way.

the councils were quickly destroyed by counterrevolution, but there is no reason to believe that, had they developed further, they would have avoided the fate of the Russian Soviets. History shows that the Bolsheviks were not the only ones to distort the council mode of operation. Even in anarcho-syndicalist Spain there is evidence that by 1937 the committee system of the CNT was beginning to clash with the assembly system; whatever the outcome might have been, the whole experiment was ended by the assault of the Communists and the Republican government against Barcelona.

The fact remains that council modes of organization are not immune to centralization, manipulation and perversion. These councils are still particularistic, one-sided and mediated forms of social management. At best, they can be the stepping stones to a decentralized society—at worst, they can easily be integrated into hierarchical forms of social organization.

#### *ASSEMBLY AND COMMUNITY*

Let us turn to the popular assembly for an insight into unmediated forms of social relations. The assembly probably formed the structural basis of early clan and tribal society until its functions were pre-empted by chiefs and councils. It appeared as the ecclesia in classical Athens; later, in a mixed and often perverted form, it reappeared in the medieval and Renaissance towns of Europe. Finally, as the "sections," assemblies emerged as the insurgent bodies in Paris during the Great Revolution. The ecclesia and the Parisian sections warrant the closest study. Both developed in the most complex cities of their time and both assumed a highly sophisticated form, often welding individuals of different social origins into a remarkable, albeit temporary, community of interests. It does not minimize their limitations to say that they developed methods of functioning so successfully libertarian in character that even the most

imaginative Utopias have failed to match in speculation what they achieved in practice.

The Athenian ecclesia was probably rooted in the early assemblies of the Greek tribes. With the development of property and social classes, it was replaced by a feudal social structure, lingering only in the social memory of the people. For a time, Athenian society seemed to be charting the disastrous course toward internal decay that Rome was to follow several centuries later. A large class of heavily mortgaged peasants, a growing number of serf-like sharecroppers, and a large body of urban laborers and slaves were polarized against a small number of powerful land magnates and a parvenu commercial middle class. By the sixth century B.C., all the conditions in Athens and Attica (the surrounding agricultural region) had ripened for a devastating social war.

The course of Athenian history was reversed by the reforms of Solon. In a series of drastic measures, the peasantry was restored to an economically viable condition, the landowners were shorn of most of their power, the ecclesia was revived, and a reasonably equitable system of justice was established. The trend toward a popular democracy continued to unfold for nearly a century and a half, until it achieved a form that has never quite been equaled elsewhere. By Periclean times the Athenians had perfected their polis to a point where it represented a triumph of rationality within the material limitations of the ancient world.

Structurally, the basis of the Athenian polis was the ecclesia. Shortly after sunrise at each prytany (the tenth day of the year), thousands of male citizens from all over Attica began to gather on the Pnyx, a hill directly outside Athens, for a meeting of the assembly. Here, in the open air, they leisurely disported themselves among groups of friends until the solemn intonation of prayers announced the opening of the meeting. The agenda, arranged under

the three headings of "sacred," "profane" and "foreign affairs," had been distributed days earlier with the announcement of the assembly. Although the ecclesia could not add or bring forward anything that the agenda did not contain, its subject matter could be rearranged at the will of the assembly. No quorum was necessary, except for proposed decrees affecting individual citizens.

The ecclesia enjoyed complete sovereignty over all institutions and offices in Athenian society. It decided questions of war and peace, elected and removed generals, reviewed military campaigns, debated and voted upon domestic and foreign policy, redressed grievances, examined and passed upon the operations of administrative boards, and banished undesirable citizens. Roughly one man out of six in the citizen body was occupied at any given time with the administration of the community's affairs. Some fifteen hundred men, chosen mainly by lot, staffed the boards responsible for the collection of taxes, the management of shipping, food supply and public facilities, and the preparation of plans for public construction. The army, composed entirely of conscripts from each of the ten tribes of Attica, was led by elected officers; Athens was policed by citizen-bowmen and Scythian state slaves.

The agenda of the ecclesia was prepared by a body called the Council of 500. Lest the council gain any authority over the ecclesia, the Athenians carefully circumscribed its composition and functions. Chosen by lot from rosters of citizens who, in turn, were elected annually by the tribes, the Council was divided into ten subcommittees, each of which was on duty for a tenth of the year. Every day a president was selected by lot from among the fifty members of the subcommittee that was on duty to the polis. During his twenty-four hours of office, the Council's president held the state seal and the keys to the citadel and public archives and functioned as acting

head of the country. Once he had been chosen, he could not occupy the position again.

Each of the ten tribes annually elected six hundred citizens to serve as "judges"—what we would call jurymen—in the Athenian courts. Every morning, they trudged up to the temple of Theseus, where lots were drawn for the trials of the day. Each court consisted of at least 201 jurymen and the trials were fair by any historical standard of juridical practice.

Taken as a whole, this was a remarkable system of social management; run almost entirely by amateurs, the Athenian polis reduced the formulation and administration of public policy to a completely public affair. "Here is no privileged class, no class of skilled politicians, no bureaucracy; no body of men, like the Roman Senate, who alone understood the secrets of State, and were looked up to and trusted as the gathered wisdom of the whole community," observes W. Warde Fowler. "At Athens there was no disposition, and in fact no need, to trust the experience of any one; each man entered intelligently into the details of his own temporary duties, and discharged them, as far as we can tell, with industry and integrity."<sup>26</sup> Overdrawn as this view may be for a class society that required slaves and denied women any role in the polis, the fact remains that Fowler's account is *essentially* accurate.

Indeed, the greatness of the achievement lies in the fact that Athens, despite the slave, patriarchal and class features it shared with classical society, as a whole developed into a working democracy in the literal sense of the term. No less significant, and perhaps consoling for our own time, is the fact that this achievement occurred when it seemed that the polis had charted a headlong course toward social decay. At its best, Athenian democracy greatly modified the more abusive and inhuman features of ancient society. The burdens of slavery were small by comparison with other historical periods, except when slaves

were employed in capitalist enterprises. Generally, slaves were allowed to accumulate their own funds; on the yeoman farmsteads of Attica they generally worked under the same conditions and shared the same food as their masters; in Athens, they were indistinguishable in dress, manner and bearing from citizens—a source of ironical comment by foreign visitors. In many crafts, slaves not only worked side by side with freemen, but occupied supervisory positions over free workers as well as other slaves.

On balance, the image of Athens as a slave economy which built its civilization and generous humanistic outlook on the backs of human chattels is false—"false in its interpretation of the past and in its confident pessimism as to the future, willfully false, above all, in its cynical estimate of human nature," observes Edward Zimmerman. "Societies, like men, cannot live in compartments. They cannot hope to achieve greatness by making amends in their use of leisure for the lives they have brutalized in acquiring it. Art, literature, philosophy, and all other great products of a nation's genius, are no mere delicate growths of a sequestered hothouse culture; they must be sturdily rooted, and find continual nourishment, in the broad common soil of national life. That, if we are looking for lessons, is one we might learn from ancient Greece."<sup>27</sup>

In Athens, the popular assembly emerged as the final product of a sweeping social transition. In Paris, more than two millennia later, it emerged as the lever of social transition itself, as a revolutionary form and an insurrectionary force. The Parisian sections of the early 1790s played the same role as organs of struggle as the Soviets of 1905 and 1917, with the decisive difference that relations within the sections were not mediated by a hierarchical structure. Sovereignty rested with the revolutionary assemblies themselves, not above them.

The Parisian sections emerged directly from the voting system established for elections to the Estates General. In 1789 the monarchy had divided the capital into sixty electoral districts, each of which formed an assembly of so-called "active" or taxpaying citizens, the eligible voters of the city. These primary assemblies were expected to elect a body of electors which, in turn, was to choose the sixty representatives of the capital. After performing their electoral functions, the assemblies were required to disappear, but they remained on in defiance of the monarchy and constituted themselves into permanent municipal bodies. By degrees they turned into neighborhood assemblies of all "active" citizens, varying in form, scope and power from one district to another.

The municipal law of May 1790 reorganized the sixty districts into forty-eight sections. The law was intended to circumscribe the popular assemblies, but the sections simply ignored it. They continued to broaden their base and extend their control over Paris. On July 30, 1792, the Theatre-Francais section swept aside the distinction between "active" and "passive" citizens, inviting the poorest and most destitute of the *sans-culottes* to participate in the assembly. Other sections followed the Theatre-Francais, and from this period the sections became authentic popular organs—indeed the very soul of the Great Revolution. It was the sections which constituted the new revolutionary Commune of August 10, which organized the attack on the Tuilleries and finally eliminated the Bourbon monarchy; it was the sections which decisively blocked the efforts of the Girondins to rouse the provinces against revolutionary Paris; it was the sections which, by ceaseless prodding, by their unending delegations and by armed demonstrations, provided the revolution with its remarkable leftward momentum after 1791.

The sections, however, were not merely fighting organizations; they represented genuine forms of self-manage-

ment. At the high point of their development, they took over the complete administration of the city. Individual sections policed their own neighborhoods, elected their own judges, were responsible for the distribution of food, provided public aid to the poor, and contributed to the maintenance of the National Guard. With the declaration of war in April 1792 the sections took on the added tasks of enrolling volunteers for the revolutionary army and caring for their families, collecting donations for the war effort, and equipping and provisioning entire battalions. During the period of the "maximum," when controls were established over prices and wages to prevent a runaway inflation, the sections took responsibility for the maintenance of government-fixed prices. To provision Paris, the sections sent their representatives to the countryside to buy and transport food and see to its distribution at fair prices.

It must be borne in mind that this complex of extremely important activities was undertaken not by professional bureaucrats but, for the most part, by ordinary shopkeepers and craftsmen. The bulk of the sectional responsibilities were discharged after working hours, during the free time of the section members. The popular assemblies of the sections usually met during the evenings in neighborhood churches. Assemblies were ordinarily open to all the adults of the neighborhood. In periods of emergency, assembly meetings were held daily; special meetings could be called at the request of fifty members. Most administrative responsibilities were discharged by committees, but the popular assemblies established all the policies of the sections, reviewed and passed upon the work of all the committees, and replaced officers at will.

The forty-eight sections were coordinated through the Paris Commune, the municipal council of the capital. When emergencies arose, sections often cooperated with each other directly, through ad hoc delegates. This form of

cooperation from below never crystalized into a permanent relationship. The Paris Commune of the Great Revolution never became an overbearing, ossified institution; it changed with almost every important political emergency, and its stability, form and functions depended largely upon the wishes of the sections. In the days preceding the uprising of August 10, 1792, for example, the sections simply suspended the old municipal council, confined Petion, the mayor of Paris, and, in the persons of their insurrectionary commissioners, took over all the authority of the Commune and the command of the National Guard. Almost the same procedure was followed nine months later when the Girondin deputies were expelled from the Convention, with the difference that the Commune, and Pache, the mayor of Paris, gave their consent (after some persuasive "gestures") to the uprising of the radical sections.

Having relied on the sections to fasten their hold on the Convention, the Jacobins began to rely on the Convention to destroy the sections. In September 1793 the Convention limited section assemblies to two a week; three months later the sections were deprived of the right to elect justices of the peace and divested of their role in organizing relief work. The sweeping centralization of France, which the Jacobins undertook between 1793 and 1794, completed the destruction of the sections.\* The sections were denied control over the police and their administrative responsibilities were placed in the hands of salaried bureaucrats. By January 1794 the vitality of the

\* Marx, it may be noted, greatly admired the Jacobins for "centralizing" France and in the famous "Address of the Central Council" (1850) modeled his tactics for Germany on their policies. This was short-sightedness of incredible proportions—and institutional emphasis that revealed a gross insensitivity to the self-activity and the self-remaking of a people in revolutionary motion. See "Listen, Marxist!"

sections had been thoroughly sapped. As Michelet observes: "The general assemblies of the sections were dead, and all their power had passed to their revolutionary committees, which, themselves being no longer elected bodies, but simply groups of officials nominated by the authorities, had not much life in them either." The sections had been subverted by the very revolutionary leaders they had raised to power in the Convention. When the time came for Robespierre, Saint-Just and Lebas to appeal to the sections against the Convention, the majority did virtually nothing in their behalf. Indeed, the revolutionary Gravilliers section—the men who had so earnestly supported Jacques Roux and the *enragés* in 1793—vindictively placed their arms at the service of the Thermidorians and marched against the Robespierrist—the Jacobin leaders, who, a few months earlier, had driven Roux to suicide and guillotined the spokesmen of the left.

#### *FROM "HERE" TO "THERE"*

The factors which undermined the assemblies of classical Athens and revolutionary Paris require very little discussion. In both cases the assembly mode of organization was broken up not only from without, but also from within—by the development of class antagonisms. There are no forms, however cleverly contrived, that can overcome the content of a given society. Lacking the material resources, the technology and the level of economic development to overcome class antagonisms as such, Athens and Paris could achieve an approximation of the forms of freedom only temporarily—and only to deal with the more serious threat of complete social decay. Athens held on to the ecclesia for several centuries, mainly because the polis still retained a living contact with tribal forms of organization; Paris developed its sectional mode of organization for a period of several years, largely because the *sans-culottes* had been precipitously swept to the

head of the revolution by a rare combination of fortunate circumstances. Both the ecclesia and the sections were undermined by the very conditions they were intended to check—property, class antagonisms and exploitation—but which they were incapable of eliminating. What is remarkable about them is that they worked at all, considering the enormous problems they faced and the formidable obstacles they had to overcome.

It must be borne in mind that Athens and Paris were large cities, not peasant villages; indeed, they were complex, highly sophisticated urban centers by the standards of their time. Athens supported a population of more than a quarter of a million, Paris over seven hundred thousand. Both cities were engaged in worldwide trade; both were burdened by complex logistical problems; both had a multitude of needs that could be satisfied only by a fairly elaborate system of public administration. Although each had only a fraction of the population of present-day New York or London, their advantages on this score were more than canceled out by their extremely crude systems of communication and transportation, and by the need, in Paris at least, for members of the assembly to devote the greater part of the day to brute **toil**. Yet Paris, no less than Athens, was administered by amateurs: by men who, for several years and in their spare time, saw to the administration of a city in revolutionary ferment. The principal means by which they made their revolution, organized its conquests, and finally sustained it against counterrevolution at home and invasion abroad, was the neighborhood public assembly. There is no evidence that these assemblies and the committees they produced were inefficient or technically incompetent. On the contrary, they awakened a popular initiative, a resoluteness in action, and a sense of revolutionary purpose that no professional bureaucracy, however radical its pretensions, could ever hope to achieve. Indeed, it is worth emphasizing that Athens founded

Western philosophy, mathematics, drama, historiography and art, and that revolutionary Paris contributed more than its share to the culture of the time and the political thought of the Western world. The arena for these achievements was not the traditional state, structured around a bureaucratic apparatus, but a system of unmediated relations, a face-to-face democracy organized into public assemblies.

The sections provide us with a rough model of assembly organization in a large city and during a period of revolutionary transition from a centralized political state to a potentially decentralized society. The ecclesia provides us with a rough model of assembly organization in a decentralized society. The word "model" is used deliberately. The ecclesia and the sections were lived experiences, not theoretical visions. But precisely because of this they validate in practice many anarchic theoretical speculations that have often been dismissed as "visionary" and "unrealistic."

The goal of dissolving propertied society, class rule, centralization and the state is as old as the historical emergence of property, classes and states. In the beginning, the rebels could look backward to clans, tribes and federations; it was still a time when the past was closer at hand than the future. Then the past receded completely from man's vision and memory, except perhaps as a lingering dream of the "golden age" or the "Garden of Eden."\* At this point the very notion of liberation becomes speculative and theoretical, and like all strictly theoretical visions its content was permeated with the social material of the present. Hence the fact that Utopia, from More to Bellamy, is an image not of a hypothetical future, but of a

\* It was not until the 1860s, with the work of Bachofen and Morgan, that humanity rediscovered its communal past. By that time the discovery had become a purely critical weapon directed against the bourgeois family and property.

present drawn to the logical conclusion of rationality—or absurdity. Utopia has slaves, kings, princes, oligarchs, technocrats, elites, suburbanites and a substantial petty bourgeoisie. Even on the left, it became customary to define the goal of a propertyless, stateless society as a series of approximations, of stages in which the end in view was attained by the use of the state. Mediated power entered into the vision of the future; worse, as the development of Russia indicates, it was strengthened to the point where the state today is not merely the "executive committee" of a specific class but a human condition. Life itself has become bureaucratized.

In envisioning the complete dissolution of the existing society, we cannot get away from the question of *power—be it power over our own lives, the "seizure of power," or the dissolution of power*. In going from the present to the future, from "here" to "there," we must ask: what is power? Under what conditions is it dissolved? And what does its dissolution mean? How do the forms of freedom, the unmediated relations of social life, emerge from a statified society, a society in which the state of unfreedom is carried to the point of absurdity—to domination for its own sake?

We begin with the historical fact that nearly all the major revolutionary upheavals began spontaneously:<sup>\*</sup> witness the three days of "disorder" that preceded the takeover of the Bastille in July 1789, the defense of the artillery in Montmartre that led to the Paris Commune of 1871, the famous "five days" of February 1917 in Petrograd, the uprising of Barcelona in July 1936, the takeover of Bud-

\* Here, indeed, "history" has something to teach us—precisely because these spontaneous uprisings are not history but various manifestations of the same phenomenon: revolution. Whosoever calls himself a revolutionist and does not study these events on their own terms, thoroughly and without theoretical preconceptions, is a dilettante who is playing at revolution.

pest and the expulsion of the Russian army in 1918. Nearly all the great revolutions came from *below*, from the molecular movement of the "masses," their progressive individuation and their explosion—an explosion which invariably took the authoritarian "revolutionists" completely by surprise.

There can be no separation of the revolutionary process from the revolutionary goal. *A society based on self-administration must be achieved by means of self-administration*. This implies the forging of a self (yes, literally a forging in the revolutionary process) and a mode of administration which the self can possess.\* If we define "power" as the power of man over man, power can only be destroyed by the very process in which man acquires power over his own life and in which he not only "discovers" himself but, more meaningfully, formulates his selfhood in all its social dimensions.

Freedom, so conceived, cannot be "delivered" to the individual as the "end product" of a "revolution"—much less as a "revolution" achieved by social-philistines who are hypnotized by the trappings of authority and power. The assembly and community cannot be legislated or decreed into existence. To be sure, a revolutionary group can purposefully and consciously seek to promote the creation of these forms; but if assembly and community are not allowed to emerge organically, if their growth is not instigated, developed and matured by the social processes at work, they will not be really popular forms. Assembly and community must arise from within the revolutionary process itself; indeed, the revolutionary process must *be* the formation of assembly and community, and with it, the

\* What Wilhelm Reich and, later, Herbert Marcuse have made clear is that "selfhood" is not only a personal dimension but also a social one. The self that finds expression in the assembly and community is, literally, the assembly and community that has found self-expression—a complete congruence of form and content.

destruction of power. Assembly and community must become "fighting words," not distant panaceas. They must be created as *modes of struggle* against the existing society, not as theoretical or programmatic abstractions.

It is hardly possible to stress this point strongly enough. The future assemblies of people in the block, the neighborhood or the district—the revolutionary sections to come—will stand on a higher social level than all the present-day committees, syndicates, parties and clubs adorned by the most resounding "revolutionary" titles. They will be the living nuclei of Utopia in the decomposing body of bourgeois society. Meeting in auditoriums, theaters, courtyards, halls, parks and—like their forerunners, the sections of 1793—in churches, they will be the arenas of demassification, for the very *essence* of the revolutionary process is people acting as individuals.

At this point the assembly may be faced not only with the power of the bourgeois state—the famous problem of "dual power"—but with the danger of the incipient state. Like the Paris sections, it will have to fight not only against the Convention, but also against the tendency to create mediated social forms.\* The factory committees, which will almost certainly be the forms that will take over industry, must be managed directly by workers' assemblies in the factories. By the same token, neighborhood committees, councils and boards must be rooted completely in the neighborhood assembly. They must be answerable at every point to the assembly; they and their work must be under continual review by the assembly; and finally, their members must be subject to immediate recall by the assembly. The specific gravity of society, in short, must be

shifted to its base—the armed people in permanent assembly.

As long as the arena of the assembly is the modern bourgeois city, the revolution is faced with a recalcitrant environment. The bourgeois city, by its very nature and structure, fosters centralization, massification and manipulation. Inorganic, gargantuan, and organized like a factory, the city tends to inhibit the development of an organic, rounded community. In its role as the universal solvent, the assembly must try to dissolve the city itself.

We can envision young people renewing social life just as they renew the human species. Leaving the city, they begin to found the nuclear ecological communities to which older people repair in increasing numbers. Large resource pools are mobilized for their use; careful ecological surveys and suggestions are placed at their disposal by the most competent and imaginative people available. The modern city begins to shrivel, to contract and to disappear, as did its ancient progenitors millennia earlier. In the new, rounded ecological community, the assembly finds its authentic environment and true shelter. Form and content now correspond completely. The journey from "here" to "there," from sections to ecclesia, from cities to communities, is completed. No longer is the factory a particularized phenomenon; it now becomes an organic part of the community. In this sense, it is no longer a factory. The dissolution of the factory into the community completes the dissolution of the last vestiges of propertied, of class, and, above all, of mediated society into the new polis. And now the real drama of human life can unfold, in all its beauty, harmony, creativity and joy.

New York  
January 1968

\* Together with disseminating ideas, the most important job of the anarchists will be to defend the spontaneity of the popular movement by continually engaging the authoritarians in a theoretical and organizational duel.